NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

PROJECT ID: **EP6-KENT2**

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

DAMAGES FOR DELAY

VOLUME 1 OF 3

BID BOOKLET

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR:

Rehabilitation and Upgrade of DEP Shaft Maintenance Building

LOCATION: **356 Flushing Avenue**
BOROUGH: **Brooklyn 11215**
CITY OF NEW YORK

CONTRACT NO. 1 **GENERAL CONSTRUCTION WORK**

Environmental Protection Agency

Deborah Berke & Partners Architects LLP

Date: **August 13, 2013**

M4-024

NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Ramon Rodriquez
Acting Agency Chief
Contracting Officer

March 28, 2014

CERTIFIED MAIL - RETURN RECEIPT REQUEST
ADAM'S EUROPEAN CONTRACTING, INC.
589 Johnson Avenue
Brooklyn, NY 11237

RE: FMS ID: EP6-KENT2
E-PIN: 85014B0027001
DDC PIN: 8502014CR0001C
REHABILITATION AND UPGRADE OF
DEP SHAFT MAINTENANCE BUILDING -
BOROUGH OF BROOKLYN
NOTICE OF AWARD

Dear Contractor:

You are hereby awarded the above referenced contract based upon your bid in the amount of $16,976,962.00 submitted at the bid opening on December 06, 2013. 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.

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,

Ramon Rodriquez
Acting ACCO

#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: EP6-KENT2

Rehabilitation and Upgrade of DEP Shaft Maintenance Building
356 Flushing Avenue
Brooklyn 11215

Name of Bidder: ADAM'S EUROPEAN CONTRACTING INC.

Date of Bid Opening: DECEMBER 06, 2013 (RS)

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

Place of Business of Bidder: 589 JOHNSON AVE, BROOKLYN, NY 11237

Bidder's Telephone Number: (718) 417-9000 Bidder's Fax Number: (718) 417-1093 (RS)

Bidder's Email Address: ADAMSEURO@ADAMSEURO.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: ADAM SKARZYNSKI
951 LOCUST AVE, BOHEMIA, NY 11716

Name and Home Address of Secretary: MALGORZATA SKARZYNSKI
951 LOCUST AVE, BOHEMIA, NY 11716

Name and Home Address of Treasurer: ADAM SKARZYNSKI
951 LOCUST AVE, BOHEMIA, NY 11716

Unit Price Schedule

Unit Price items: The items of work set forth in the Schedule below shall be performed by the contractor on a unit price basis for additional work. Such items of work shall be performed by the contractor only as directed in writing by the Commissioner.

The unit price for the items of work in the Schedule below are for EXTRA WORK ONLY i.e., work which is above and beyond that described in the Drawings and Specifications.

The bidder shall submit prices for all the items of work in the Schedule below. The bidder shall insert the total sum for all unit price items on the Bid Form, Item C - Allowance for Unit Prices. The unit price bid for each item shall include all costs and expense for the item, i.e., labor, material, overhead and profit. Quantities shown are approximate and for bid comparison purposes only. Actual amounts to be determined when the work is performed.

CSI #	Item #	Item Description	Quant.	Units	Unit Price	Total
03 41 13	1	Allow for 5% of the gross pitched roof area originally containing skylights and ventilators. Remove and replace infill with concrete on metal deck. See S-240 for skylight infill locations.	60	SF	45	2,700
04 01 00	2	Perform Injection Grouting As Specified	500	SF	45	22,500
04 01 00	3	Perform Brick Stitching - 4 Courses Wide (Excluding Note 12)	100	LF	60	6,000
04 01 00	4	Remove And Rebuild Exterior Wythe Of Brick	600	SF	60	36,000
04 01 00	5	Remove And Rebuild Individual Wythes Of Brick Backup - Assume 2 Wythes Thick	500	SF	90	45,000
04 01 00	6	Rebuild Masonry Backup/Parging Where Corrugated Metal Panels Are Removed	1500	SF	25	37,500
04 01 00	7	Stabilize Of Existing Brick After Removal Of Parge Coat	300	SF	12	3,600
04 01 00	8	Remove And Replace Individual Brick.	200	PCS	20	4,000
04 01 00		In Addition To The Area Shown On The East Elevation Drawing, And For The Purpose Of The Bid, Showing The Area Of The Brick Flat Arch To Be Injection Grouted, Allow The Following				
04 01 00	9	Remove and Rebuild 24 inch by 24 inch Section of Masonry Arch as shown on the drawings	12	EA	240	2,880
04 01 00	10	Remove and Rebuild 72 inch by 24 inch Section of Masonry Arch as shown on the drawings.	6	EA	720	4,320
04 40 00	11	Provide Injection Grouting Of Window Sills	10	EA	405	4,050
04 40 00	12	Perform Repair Of Granite Lintels By Injection And Pins/Anchors	4	EA	950	6000

04 40 00		Allow For The Replacement Of Granite Lintels - Complete Including Brick, Steel, Flashings And Granite.				
04 40 00	13	3 Window Opening	1	EA	3750	3,750
04 40 00	14	2 Window Opening	1	EA	2,500	2,500
04 40 00	15	1 Window Opening	1	EA	1,250	1,250
05 12 00	16	Allow For Additional Connection Repairs Over And Above The 20% Required at Column Bases. See 2-S-400 for detail	25	EA	350	8,750
05 12 00	17	Allow For Wide Flange Reinforcement Plates And Shapes	100	EA	450	4,500
05 12 00	18	Provide Miscellaneous Structural Shapes - Channels, Angles And Plates Used For Reinforcing, Fabricated, Delivered And Placed On Scaffold For Use In The Different Areas Requiring Reinforcing.	10	TON	7,000	70,000
05 12 00	19	Allow For Weldability Testing of Each Unique Steel Section Requiring Repairs That Is Uncovered During The Course Of The Work.	50	EA	350	17,500
05 12 00	20	Allow For Fillet Welds Testing- 20% Required As Part Of Base Bid	50	EA	250	12,500
05 12 00		Lattice Column Repairs - Including Brick Removal And Replacement				
05 12 00	21	Perform Web Reinforcement W/Steel Plates - Additional Height For Repairs	50	LF	160	8,000
05 12 00	22	Remove And Replace Lattice W/Steel Flange Plates - Additional Height For Repairs Outside Face	50	LF	160 (US)	8,000
05 12 00	23	Remove And Replace Lattice W/Steel Flange Plates - Additional Height For Repairs Inside Face See Drawing S400 For Schedule For Estimated Lattice Column Repairs.	50	LF	160 (US)	8,000
05 12 00		Column Bases See Schedule On S400				
05 12 00	24	Perform Web Reinforcement	12	EA	1,050	12,600
05 12 00	25	Perform Flange Plate Reinforcing	12	EA	1,050	12,600
05 12 00	26	Provide New Anchor Bolts (2x Quantity Of Columns)	100	EA	35	3,500
05 12 00		Built-Up Girders See Schedule On S400				
05 12 00	27	Provide Flange Replacement – Top Plate/Plates Including Replacement of all Rivets Where Flanges Replaced	17	LF / Girder	2,500	42,500
05 12 00	28	Perform Flange Replacement – Bottom Plate/Plates Including Replacement of all Rivets Where Flanges Replace	12	LF / Girder	2,500	30,000

05 12 00	29	Provide Web Reinforcing + Stiffener Angles X2 (Each Side Plus Bolts)Installed	12	LF / Girder	2,500	30,000
05 12 00	30	Provide Top Or Bottom Angles That Make Up Flange – 300lf X 2- (Each Side)	17	LF / Girder	2,500	42,500
05 12 00	31	Provide Miscellaneous Rivets	2000	EA	10	20,000
05 12 00	32	Provide Filler Beams As Shown on the Schedule On S400	40	EA	1,050	42,000
05 74 00	33	Cast Iron Spandrel Panel Cap	2	EA	1,000	2,000
05 74 00	34	Cast Iron Spandrel Panel - Repair	4	EA	1,000	4,000
05 74 00	35	Cast Iron Spandrel Panel - Replace	6	EA	1,000	6,000
05 74 00	36	Cast Iron Spandrel Panel Base	4	EA	1,000	4,000
05 74 00	37	Cast Iron Right Side Column, Upper Section	4	EA	1,000	4,000
05 74 00	38	Cast Iron Left Side Column, Upper Section	4	EA	1,000	4,000
05 74 00	39	Cast Iron Center Column, Upper Section	4	EA	1,000	4,000
05 74 00	40	Cast Iron Center Column, Lower Section	4	EA	1,000	4,000
05 74 00	41	Cast Iron Right Side Column, Lower Section	4	EA	1,000	4,000
05 74 00	42	Cast Iron Left Side Column, Lower Section	4	EA	1,000	4,000
05 74 00	43	Cast Iron Header Above Lower Window	2	EA	1,000	2,000
06 00 00	44	Perform Pull Out Tests On Existing Sleepers	20	EA	100	2,000
06 00 00	45	Remove And Replace Deteriorated Sleepers On Sloped Roof Made Visible After Removal Of Plywood Sheathing And Shingle Roofing Under Terms And Conditions Of The Base Bid	3400	LF	10	34,000

Total Amount of Unit Price Work 633,000.00*

* Insert Total amount of Unit Price Work on line C of Bid Form

Note: All quantities are approximate

BID FORM

PROJECT ID: EP6-KENT2

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 items (B) and (C) 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 Material Sold and Delivered	Total Price For Labor	
$5,720,386.70+	$10,593,575.30 (fees)	Total Price for Item A= $16,313,962.00

B. ALLOWANCE for Incidental Asbestos Abatement (Section 028013 of the Specifications) **$30,000.00**

C. AMOUNT for Unit Prices (from pages 13-0, 13-1, & 13-2) for extra work items $33,000.00

TOTAL BID PRICE (Add A + B + C) (a/k/a BID PROPOSAL) $16,976,962.00 (fees)

MC 12-6-12

BIDDER'S SIGNATURE AND AFFIDAVIT

* **SUBCONTRACTOR IDENTIFICATION: You MUST complete and submit the form entitled "Bidder's Identification of Subcontractors" (page 17) 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: ADAM'S EUROPEAN CONTRACTING INC.

By: M. Skarzynska
MALGORZATA SKARZYNSKA-CEO (Signature of Partner or corporate officer)

Attest: M. Skarzynska
MALGORZATA SKARZYNSKA/CEO 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 KINGS ss:

MALGORZATA SKARZYNSKI being duly sworn says:

I am the CEO of the above named corporation whose name is subscribed to and which executed the foregoing bid. I reside at 951 LOCUST AVE, BOHEMIA, NY 11716.

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

M. Skarzynska

(Signature of Corporate Officer who signed the Bid)

Subscribed and sworn to before me this

25th day of ~~NOVEMBER~~ DECEMBER 2013

Dominika Majewska

Notary Public

DOMINIKA D MAJEWSKA
Notary Public - State of New York
NO. 01MA6226908
Qualified in Queens County
My Commission Expires Aug 16, 2014

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: ADAM'S EUROPEAN CONTRACTING INC.
Address: 589 JOHNSON AVENUE
City: BROOKLYN State: NEW YORK Zip Code: 11237

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

11-3210275

By: M. Skarzynski
Signature:

Title: MALGORZATA SKARZYNSKI - CEO

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.

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	CONTRACT 1 - GENERAL CONSTRUCTION WORK							
Division 1	General Requirements							
010000	Mobilization	1	LS	$ 179,550.00	$ 179,550.00	$ 219,450.00	$ 219,450.00	$ 399,000.00
	subtotal:							$ 399,000.00
015423	Scaffolding /Staging							
	Scaffolding	65000	SF	$ 5.04	$ 327,600.00	$ 6.16	$ 400,400.00	$ 728,000.00
	Sidewalk Bridge	780	LF	$ 91.35	$ 71,253.00	$ 111.65	$ 87,087.00	$ 158,340.00
	subtotal:							$ 886,340.00
015719	Enviromental Protection During Construction (Included w/General							
017329	Cutting and Patching (Included w/General Conditions)							
017419	Construction Waste Management (Included w/General Conditions)							
Division 2	Existing Conditions							
024100	Demolition							
	Interior Demolition							
	Remove Existing Masonry Infill @ Window Openings	479	SF	$ 12.60	$ 6,035.40	$ 15.40	$ 7,376.60	$ 13,412.00
	Remove Ventilations Fans @ Window Openings	2	EA	$ 126.00	$ 252.00	$ 154.00	$ 308.00	$ 560.00
	Demo Partitions	2008	SF	$ 5.04	$ 10,120.32	$ 6.16	$ 12,369.28	$ 22,489.60
	Remove Doors & Frames	18	EA	$ 346.50	$ 6,237.00	$ 423.50	$ 7,623.00	$ 13,860.00
	Demo Lower Portion of Column Casing & Slab To Expose Structural Steel Base	72	EA	$ 75.60	$ 5,443.20	$ 92.40	$ 6,652.80	$ 12,096.00
	Remove Existing Reinforced Concerete Slab	15100	SF	$ 10.08	$ 152,208.00	$ 12.32	$ 186,032.00	$ 338,240.00
	Remove Exisitng Finished Flooring, Prepare for Paint	520	SF	$ 3.15	$ 1,638.00	$ 3.85	$ 2,002.00	$ 3,640.00
	Remove Existing Finished Suspended Ceiling	520	SF	$ 4.41	$ 2,293.20	$ 5.39	$ 2,802.80	$ 5,096.00
	Remove Plumbing Fixtures & Cap	7	EA	$ 945.00	$ 6,615.00	$ 1,155.00	$ 8,085.00	$ 14,700.00
	Salvage Removed Lavs For Reinstallation	2	EA	$ 630.00	$ 1,260.00	$ 770.00	$ 1,540.00	$ 2,800.00
	Remove Toilet Rm. Finishes	750	SF	$ 3.78	$ 2,835.00	$ 4.62	$ 3,465.00	$ 6,300.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Remove Concrete Curb,Steps/Stair & Landings	870	SF	$ 7.56	$ 6,577.20	$ 9.24	$ 8,038.80	$ 14,616.00
	Remove Window & Masonry Wall Below New Door Opening	1	EA	$ 472.50	$ 472.50	$ 577.50	$ 577.50	$ 1,050.00
	Remove Metal Stair & Doors @ Rm 110	1	LS	$ 3,150.00	$ 3,150.00	$ 3,850.00	$ 3,850.00	$ 7,000.00
	Vertical Duct Slab Penetrations	20	EA	$ 283.50	$ 5,670.00	$ 346.50	$ 6,930.00	$ 12,600.00
	Chop Concrete Slab Penetrations	100	SF	$ 3.78	$ 378.00	$ 4.62	$ 462.00	$ 840.00
	Remove Self Contained Office Cubicles	3	EA	$ 378.00	$ 1,134.00	$ 462.00	$ 1,386.00	$ 2,520.00
	Prepare Floor for Ceramic Tile	468	SF	$ 3.78	$ 1,769.04	$ 4.62	$ 2,162.16	$ 3,931.20
	Remove Radiator in Map Room & Cap	75	LF	$ 85.05	$ 6,378.75	$ 103.95	$ 7,796.25	$ 14,175.00
	Remove Door & Patch Masonry Openings	18	EA	$ 157.50	$ 2,835.00	$ 192.50	$ 3,465.00	$ 6,300.00
	Remove Mezzanine & Related Lighting	1180	SF	$ 22.05	$ 26,019.00	$ 26.95	$ 31,801.00	$ 57,820.00
	Drain & Clean Abandiondoned Pit of Debris	1	LS	$ 6,300.00	$ 6,300.00	$ 7,700.00	$ 7,700.00	$ 14,000.00
	Remove Concerete Encasement on Griders	2100	CY	$ 10.08	$ 21,168.00	$ 12.32	$ 25,872.00	$ 47,040.00
	Remove Portion of masonry Shaft Wall in Cellar for Mep's	18	LOC	$ 428.40	$ 7,711.20	$ 523.60	$ 9,424.80	$ 17,136.00
	Remove Shoring	1	LS	$ 3,150.00	$ 3,150.00	$ 3,850.00	$ 3,850.00	$ 7,000.00
	Remove Beams under a Ramp	11	EA	$ 157.50	$ 1,732.50	$ 192.50	$ 2,117.50	$ 3,850.00
	Misc. Demolition							
	Remove Existing Skylight Infill	300	SF	$ 12.60	$ 3,780.00	$ 15.40	$ 4,620.00	$ 8,400.00
	Remove Exterior Sign	1	EA	$ 630.00	$ 630.00	$ 770.00	$ 770.00	$ 1,400.00
	Remove Exterior CMU Wall for New Louver	100	SF	$ 12.60	$ 1,260.00	$ 15.40	$ 1,540.00	$ 2,800.00
	subtotal:							**$ 655,671.80**
028213	**Asbestos Abatement**							
	Asbestos Abatement	1	LS	$ 154,350.00	$ 154,350.00	$ 188,650.00	$ 188,650.00	$ 343,000.00
	subtotal:							**$ 343,000.00**
Division 3	**Concrete**							
033000	**Cast In Place Concrete**							
	Infill Abandoned Pit W/Concrete							
	- W/Concrete	32	CY	$ 409.50	$ 13,104.00	$ 500.50	$ 16,016.00	$ 29,120.00
	- W/Polystyrene	95	CY	$ 163.80	$ 15,561.00	$ 200.20	$ 19,019.00	$ 34,580.00
	Scar Patch Floor on 3rd Floor @ Removed caged Partition	1080	SF	$ 2.52	$ 2,721.60	$ 3.08	$ 3,326.40	$ 6,048.00
	LW Concrete Slab (On Metal/Roof Deck)	72	SF	$ 18.90	$ 1,360.80	$ 23.10	$ 1,663.20	$ 3,024.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	3 1/4" Concerete on Metal Deck @ New Slab & Ramp	15100	SF	$ 12.60	$ 190,260.00	$ 15.40	$ 232,540.00	$ 422,800.00
	Concrete Ramp to Main Office	40	SF	$ 22.05	$ 882.00	$ 26.95	$ 1,078.00	$ 1,960.00
	Slab Depression(Included Above)							
	Concrete on Metal Deck @ Removed Skylight Infill	300	SF	$ 15.12	$ 4,536.00	$ 18.48	$ 5,544.00	$ 10,080.00
	9" Thick Concrete Curb @ Ramp	33	CY	$ 409.50	$ 13,513.50	$ 500.50	$ 16,516.50	$ 30,030.00
	Spall Repair on Concrete Roof Slabs (5% of Courtyard Roof)	150	SF	$ 15.12	$ 2,268.00	$ 18.48	$ 2,772.00	$ 5,040.00
	subtotal:							**$ 542,682.00**
034113	**Precast Conceret Plank**							
	Replace Concerete Plank in Kind @ Infilled Skylights (5%)	15	SF	$ 12.60	$ 189.00	$ 15.40	$ 231.00	$ 420.00
	subtotal:							**$ 420.00**
Division 4	**Masonry**							
040100	**Masonry Restoration and cleaning**							
	Remove Bulkhead Parapet Wall	285	SF	$ 12.60	$ 3,591.00	$ 15.40	$ 4,389.00	$ 7,980.00
	Remove Extraneous Metal Attachements	23	EA	$ 157.50	$ 3,622.50	$ 192.50	$ 4,427.50	$ 8,050.00
	Masonry Cleaning (100% of existing masonry façade)	23150	SF	$ 3.15	$ 72,922.50	$ 3.85	$ 89,127.50	$ 162,050.00
	Repoint Stone Masonry	12258	SF	$ 9.45	$ 115,838.10	$ 11.55	$ 141,579.90	$ 257,418.00
	Repoint Brick Masonry	10892	SF	$ 10.08	$ 109,791.36	$ 12.32	$ 134,189.44	$ 243,980.80
	Brick Replacement per drawings	3485	SF	$ 37.80	$ 131,733.00	$ 46.20	$ 161,007.00	$ 292,740.00
	Brick Replacement Allowance per general scope	600	SF	$ 37.80	$ 22,680.00	$ 46.20	$ 27,720.00	$ 50,400.00
	Brick stabilization @Corrugated Panels Allowance per drawings	2565	SF	$ 22.05	$ 56,558.25	$ 26.95	$ 69,126.75	$ 125,685.00
	Honing of Spalled Face Brick Allow per drawings	800	Ea	$ 15.75	$ 12,600.00	$ 19.25	$ 15,400.00	$ 28,000.00
	Grout Injection Granite sills allow per drawings	40	LOC	$ 63.00	$ 2,520.00	$ 77.00	$ 3,080.00	$ 5,600.00
	Stitch Repair Large Vertical Crack Full Height of South wall @Column Line C	38	LF	$ 28.35	$ 1,077.30	$ 34.65	$ 1,316.70	$ 2,394.00
	Injection Grout Allowance per Drawings	620	SF	$ 28.35	$ 17,577.00	$ 34.65	$ 21,483.00	$ 39,060.00
	Repair Replace Masonry Corners	6	EA	$ 945.00	$ 5,670.00	$ 1,155.00	$ 6,930.00	$ 12,600.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Grout Injection Jack Lintels	190	EA	$ 22.05	$ 4,189.50	$ 26.95	$ 5,120.50	$ 9,310.00
	Masonry Parapet at Bulkhead	285	SF	$ 425.25	$ 121,196.25	$ 519.75	$ 148,128.75	$ 269,325.00
	Scaffolding(included 015423							
	Sidewalk Bridging (included 015423)							
	subtotal:							**$ 1,514,592.80**
040503	**Mortars (Include w/042000)**							
042000	**Unit Masonry**							
	6" CMU Partition	1850	SF	$ 28.35	$ 52,447.50	$ 34.65	$ 64,102.50	$ 116,550.00
	Infill Windows Openings W/ CMU & cementitious WP	182	SF	$ 44.10	$ 8,026.20	$ 53.90	$ 9,809.80	$ 17,836.00
	Infill Interior Door Openings	100	SF	$ 12.60	$ 1,260.00	$ 15.40	$ 1,540.00	$ 2,800.00
	Remove & Replace Masonry Column Enclosures @ Lattice Columns	3436	CF	$ 69.30	$ 238,114.80	$ 84.70	$ 291,029.20	$ 529,144.00
	Work @ Existing Brick Shaft Wall for New Ramp Structural Steel							
	Remove Portion of Existing Brick Shaft Wall	104	SF	$ 12.60	$ 1,310.40	$ 15.40	$ 1,601.60	$ 2,912.00
	Provide 3 Wythe Brick Infill After Steel is Installed	104	SF	$ 69.30	$ 7,207.20	$ 84.70	$ 8,808.80	$ 16,016.00
	Mortar Fire Proofing	30	SF	$ 28.35	$ 850.50	$ 34.65	$ 1,039.50	$ 1,890.00
	Provide Shoring	30	LF	$ 28.35	$ 850.50	$ 34.65	$ 1,039.50	$ 1,890.00
	subtotal:							**$ 689,038.00**
044000	**Stone Work**							
	Granite Sill Repair in Place (20% of Total Sills)	212	LF	$ 40.95	$ 8,681.40	$ 50.05	$ 10,610.60	$ 19,292.00
	Removal & Replacement of Granite Lintels:							
	Temporary Support masonry Above Lintels	90	LF	$ 6.30	$ 567.00	$ 7.70	$ 693.00	$ 1,260.00
	Remove & Reinstall Stone Masonry	50	SF	$ 75.60	$ 3,780.00	$ 92.40	$ 4,620.00	$ 8,400.00
	Remove & Replace Brick Masonry	155	SF	$ 37.80	$ 5,859.00	$ 46.20	$ 7,161.00	$ 13,020.00
	Remove & Replace Granite Lintels	75	LF	$ 94.50	$ 7,087.50	$ 115.50	$ 8,662.50	$ 15,750.00
	Remove embeded Steel @ Removed Brick Masonry	100	LF	$ 6.30	$ 630.00	$ 7.70	$ 770.00	$ 1,400.00
	Evaluate Lintels for Cracks w/Non Destructive Testing Company	1	LS	$ 9,450.00	$ 9,450.00	$ 11,550.00	$ 11,550.00	$ 21,000.00
	Remove & Replace Chimney Caps	2	EA	$ 3,150.00	$ 6,300.00	$ 3,850.00	$ 7,700.00	$ 14,000.00
	subtotal:							**$ 94,122.00**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
Division 5	**Metals**							
051200	**Structural Steel**							
	Remove Bulkhead Roof Structure	240	SF	$ 12.60	$ 3,024.00	$ 15.40	$ 3,696.00	$ 6,720.00
	Lattice Column Repair:							
	Temorary Shoring & Bracing of Columns	32	EA	$ 630.00	$ 20,160.00	$ 770.00	$ 24,640.00	$ 44,800.00
	Remove & Replace Lattice Diagonal Bracing (Allow 50%)	560	LF	$ 91.35	$ 51,156.00	$ 111.65	$ 62,524.00	$ 113,680.00
	Scrape & Paint Exposed Columns	450	LF	$ 6.30	$ 2,835.00	$ 7.70	$ 3,465.00	$ 6,300.00
	Column Base Repair							
	Welded Repair For Coumn Bases (Allow 20 ea)	20	EA	$ 661.50	$ 13,230.00	$ 808.50	$ 16,170.00	$ 29,400.00
	Scrape & Paint Exposed Columns	400	LF	$ 6.30	$ 2,520.00	$ 7.70	$ 3,080.00	$ 5,600.00
	Removal & Replacement of Bottom Flanges (Allow 300LF of (2) 6"x6" x 1/2 L)	300	LF	$ 81.90	$ 24,570.00	$ 100.10	$ 30,030.00	$ 54,600.00
	Removal & Replacement of Web Plate (Allow 120 LF of 4'-0" x 1/2" Plate)	120	LF	$ 103.95	$ 12,474.00	$ 127.05	$ 15,246.00	$ 27,720.00
	Removal & Replacement of Moment Plate (Allow 100 LF of 1'-3" x 3/4" Plate)	100	LF	$ 75.60	$ 7,560.00	$ 92.40	$ 9,240.00	$ 16,800.00
	Removal & Replacement of Rivets to Bolts (Allow2000 EA)	2000	EA	$ 22.05	$ 44,100.00	$ 26.95	$ 53,900.00	$ 98,000.00
	Garage Door Girder Repair							
	Removal & Replacement of Top Flanges (Allow 30% of (2) 6"x6" x 7/8" L)	460	LF	$ 94.50	$ 43,470.00	$ 115.50	$ 53,130.00	$ 96,600.00
	Removal & Replacement of Web Plate (Allow 20% of 4'-0" x 1/2" Plate)	307	LF	$ 94.50	$ 29,011.50	$ 115.50	$ 35,458.50	$ 64,470.00
	Removal & Replacement of Top Plate (Allow 240 LF of 1'-4" x 1/2" Plate)	240	LF	$ 40.95	$ 9,828.00	$ 50.05	$ 12,012.00	$ 21,840.00
	Removal & Replacement of Riviets (Allow 6000 EA)	6000	EA	$ 22.05	$ 132,300.00	$ 26.95	$ 161,700.00	$ 293,046.75
	Bottom Flanges Replacement (Allow 20% Per Drawings)	420	LF	$ 40.95	$ 17,199.00	$ 50.05	$ 21,021.00	$ 38,220.00
	Bottom Flanges Replacement (Allow 30% Per Drawings)	630	LF	$ 40.95	$ 25,798.50	$ 50.05	$ 31,531.50	$ 57,330.00
	Scrape & Paint Exposed Girders	4130	SF	$ 3.15	$ 13,009.50	$ 3.85	$ 15,900.50	$ 28,910.00
	Remove & Replace Existing Lintels @ Cellar	450	LF	$ 40.95	$ 18,427.50	$ 50.05	$ 22,522.50	$ 40,950.00
	Visually Inspect Lintels	56	EA	$ 63.00	$ 3,528.00	$ 77.00	$ 4,312.00	$ 7,840.00
	Expose Lintels for Inspection & Patch Masonry	56	EA	$ 220.50	$ 12,348.00	$ 269.50	$ 15,092.00	$ 27,440.00
	Replace Lintels Allow Per Drawings	20	EA	$ 368.55	$ 7,371.00	$ 450.45	$ 9,009.00	$ 16,380.00
	Remove Beam Above Garage Doors	6	EA	$ 315.00	$ 1,890.00	$ 385.00	$ 2,310.00	$ 4,200.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	New Beam Above Garage Doors	4320	LBS	$ 1.89	$ 8,164.80	$ 2.31	$ 9,979.20	$ 18,144.00
	Structural Steel @ Bulkheads	2850	LBS	$ 1.89	$ 5,386.50	$ 2.31	$ 6,583.50	$ 11,970.00
	Structural Steel @ Skylight Infill	1960	LBS	$ 1.89	$ 3,704.40	$ 2.31	$ 4,527.60	$ 8,232.00
	Metal Deck @ Ramp @ New Slab	24411	LBS	$ 1.89	$ 46,136.79	$ 2.31	$ 56,389.41	$ 102,526.20
	subtotal:							**$ 1,241,718.95**
053000	**Metal Decking**							
	Metal Deck @ BH Roof	482	SF	$ 12.60	$ 6,073.20	$ 15.40	$ 7,422.80	$ 13,496.00
	Metal Deck @ Skylight Infill	300	SF	$ 12.60	$ 3,780.00	$ 15.40	$ 4,620.00	$ 8,400.00
	Metal Deck @ Ramp @ New Slab	15172	SF	$ 12.60	$ 191,167.20	$ 15.40	$ 233,648.80	$ 424,816.00
	subtotal:							**$ 446,712.00**
054000	**Cold Formed Metal Framing**							
	2 x 10 Metal Joist Floor Framing @ Rm 110	72	SF	$ 8.82	$ 635.04	$ 10.78	$ 776.16	$ 1,411.20
	subtotal:							**$ 1,411.20**
055000	**Metal Fabrications**							
	Provide Metal Non-Slip Nosing on Existing Stairs	864	LF	$ 69.30	$ 59,875.20	$ 84.70	$ 73,180.80	$ 133,056.00
	Remove & Replace Railing System @ Exisitng Stairs	384	LF	$ 151.20	$ 58,060.80	$ 184.80	$ 70,963.20	$ 129,024.00
	Caged Ladder @ BH	12	LF	$ 138.60	$ 1,663.20	$ 169.40	$ 2,032.80	$ 3,696.00
	Channel & Angle Door Frames @ Overhead Doors			$ 75.60	$ -	$ 92.40	$ -	$ -
	Satir D:							
	Stair Treads & Riser	16	RFT	$ 346.50	$ 5,544.00	$ 423.50	$ 6,776.00	$ 12,320.00
	Landings	12	SF	$ 40.95	$ 491.40	$ 50.05	$ 600.60	$ 1,092.00
	Guardrailing	12	LF	$ 151.20	$ 1,814.40	$ 184.80	$ 2,217.60	$ 4,032.00
	Wall Railling	26	LF	$ 59.85	$ 1,556.10	$ 73.15	$ 1,901.90	$ 3,458.00
	Satir E & F:							
	Stair Treads & Risers	6	RFT	$ 346.50	$ 2,079.00	$ 423.50	$ 2,541.00	$ 4,620.00
	Landings	245	SF	$ 40.95	$ 10,032.75	$ 50.05	$ 12,262.25	$ 22,295.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Guardrailing	80	LF	$ 151.20	$ 12,096.00	$ 184.80	$ 14,784.00	$ 26,880.00
	Satir G:							
	Stair Treads & Riser	3	RFT	$ 346.50	$ 1,039.50	$ 423.50	$ 1,270.50	$ 2,310.00
	Ramp & Landings	197	SF	$ 40.95	$ 8,067.15	$ 50.05	$ 9,859.85	$ 17,927.00
	Guardrailing	68	LF	$ 151.20	$ 10,281.60	$ 184.80	$ 12,566.40	$ 22,848.00
	Provide Trench Drain Forms & Boxes including Concrete Cutting & Patching	28	LF	$ 220.50	$ 6,174.00	$ 269.50	$ 7,546.00	$ 13,720.00
	Provide Pipe Railing @ RM 113	7	LF	$ 113.40	$ 793.80	$ 138.60	$ 970.20	$ 1,764.00
	Cage Door to Acess Underside of Stair	3	EA	$ 3,150.00	$ 9,450.00	$ 3,850.00	$ 11,550.00	$ 21,000.00
	Cage & Door to Deter Egress Travel W/Panic HW	3	EA	$ 3,465.00	$ 10,395.00	$ 4,235.00	$ 12,705.00	$ 23,100.00
	New Mtl Plate @ Chair Lift Threshold Checkered Plate Steel	4	LF	$ 53.55	$ 214.20	$ 65.45	$ 261.80	$ 476.00
	6" Painted Steel metal Bollards	34	EA	$ 472.50	$ 16,065.00	$ 577.50	$ 19,635.00	$ 35,700.00
	Pipe Railing @ Ramp Rm 101	20	LF	$ 151.20	$ 3,024.00	$ 184.80	$ 3,696.00	$ 6,720.00
	subtotal:							**$ 486,038.00**
057411	**Cast Iron Restoration**							
	Remove Cast Iron Panels & Columns @ Courtyard Bays	3	Ea	$ 69.30	$ 207.90	$ 84.70	$ 254.10	$ 462.00
	Remove Cast Iron Elements from Masonry Openings & Ship to Remote Restoration Shop	42	LOC	$ 151.20	$ 6,350.40	$ 184.80	$ 7,761.60	$ 14,112.00
	Cast Iron Restoration							
	Panels	650	SF	$ 40.95	$ 26,617.50	$ 50.05	$ 32,532.50	$ 59,150.00
	Columns	2545	LF	$ 53.55	$ 136,284.75	$ 65.45	$ 166,570.25	$ 302,855.00
	Casting Replacements							
	Spandrel Panels (15%Total)	98	SF	$ 69.30	$ 6,791.40	$ 84.70	$ 8,300.60	$ 15,092.00
	Spandrel Panel Cap	24	LF	$ 53.55	$ 1,285.20	$ 65.45	$ 1,570.80	$ 2,856.00
	Spandrel Panel Base	265	LF	$ 63.00	$ 16,695.00	$ 77.00	$ 20,405.00	$ 37,100.00
	Columns	88	LF	$ 69.30	$ 6,098.40	$ 84.70	$ 7,453.60	$ 13,552.00
	Header Above Lower Window	265	LF	$ 53.55	$ 14,190.75	$ 65.45	$ 17,344.25	$ 31,535.00
	Repair/Refurbish of Spandrel Panels & Sound Existing Parge Coat	65	SF	$ 3.78	$ 245.70	$ 4.62	$ 300.30	$ 546.00
	Remove Parge Coat From Behind Spandrel Panels & Sound Existing Parge Coat	1340	SF	$ 2.52	$ 3,376.80	$ 3.08	$ 4,127.20	$ 7,504.00
	Remove Masonry From Behind Spandrel Panels	1340	SF	$ 5.04	$ 6,753.60	$ 6.16	$ 8,254.40	$ 15,008.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Replace Parge Coat	1340	SF	$ 5.04	$ 6,753.60	$ 6.16	$ 8,254.40	$ 15,008.00
	Temporary Protection	1340	SF	$ 2.52	$ 3,376.80	$ 3.08	$ 4,127.20	$ 7,504.00
	subtotal:							**$ 522,284.00**
Division 6	**Wood,Plastics and Composites**							
60000	**Carpentry (Rough and Finish Carpentry)**							
	Temporary Partitions (5000 SF)	5000	SF	$ 3.78	$ 18,900.00	$ 4.62	$ 23,100.00	$ 42,000.00
	PT Roof Blocking @ BH Roof	82	LF	$ 6.30	$ 516.60	$ 7.70	$ 631.40	$ 1,148.00
	(2) 3/4" Plywood Subfloor @ Room 110	1164	SF	$ 5.04	$ 5,866.56	$ 6.16	$ 7,170.24	$ 13,036.80
	Remove & Replace Existing Roof Sleepers	5681	LF	$ 3.78	$ 21,474.18	$ 4.62	$ 26,246.22	$ 47,720.40
	Provide Pull Test to Determine Capacity of Existing Concrete Deck	1	EA	$ 945.00	$ 945.00	$ 1,155.00	$ 1,155.00	$ 2,100.00
	L.G Mtl Framing W/1 Layer Of 3/4" Plywood On Each Side & Insulation @ Garage Door	56	SF	$ 7.56	$ 423.36	$ 9.24	$ 517.44	$ 940.80
	Misc. Rough Blocking	1	LS	$ 6,300.00	$ 6,300.00	$ 7,700.00	$ 7,700.00	$ 14,000.00
	Subtotal:							**$ 120,946.00**
Division 7	**Thermal and Moisture Protection**							
072200	**Roof Insulation - Nail Base Type**							
	Tapered Insulation @ courtyard & BH Roof (Included w/ 075300)							
	Composite Nail Base Insulation @ Pitched Roof	25692	SF	$ 1.89	$ 48,557.88	$ 2.31	$ 59,348.52	$ 107,906.40
	Subtotal:							**$ 107,906.40**
075300	**Membrane Roofing (EPDM)**							
	Remove Existing Membrane Roofing							
	Bulkhead	482	SF	$ 3.15	$ 1,518.30	$ 3.85	$ 1,855.70	$ 3,374.00
	Second Floor Courtyard	2923	SF	$ 3.15	$ 9,207.45	$ 3.85	$ 11,253.55	$ 20,461.00
	Temp. Roof weather Protection	482	SF	$ 3.78	$ 1,821.96	$ 4.62	$ 2,226.84	$ 4,048.80
	EPDM Roof Systems							
	Bulkhead	482	SF	$ 12.60	$ 6,073.20	$ 15.40	$ 7,422.80	$ 13,496.00
	Gravel Stop @ Bulkhead	190	SF	$ 15.12	$ 2,872.80	$ 18.48	$ 3,511.20	$ 6,384.00
	Second Floor Courtyards	2923	SF	$ 13.86	$ 40,512.78	$ 16.94	$ 49,515.62	$ 90,028.40
	subtotal:							**$ 137,792.20**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
076000	**Flashing and Sheet Metal**							
	Remove & Replace Copper Cap Flashing W/ Aluminum Coping	450	LF	$ 13.86	$ 6,237.00	$ 16.94	$ 7,623.00	$ 13,860.00
	Remove & Replace Copper Flashing On 3rd Floor Courtyard Sills	100	LF	$ 13.86	$ 1,386.00	$ 16.94	$ 1,694.00	$ 3,080.00
	Provide Roof Drain Flashing Pans & Roof Scuppers	35	EA	$ 157.50	$ 5,512.50	$ 192.50	$ 6,737.50	$ 12,250.00
	New Break Form Sill Flashing @ Second Floor Windows	150	LF	$ 13.86	$ 2,079.00	$ 16.94	$ 2,541.00	$ 4,620.00
	Cap Flashing	798	LF	$ 56.70	$ 45,246.60	$ 69.30	$ 55,301.40	$ 100,548.00
	Subtotal:							**$ 134,358.00**
076110	**Metal Roofing**							
	Remove Asphalt Shingle Roofing, Flashing, Sheathing & Framing	25692	SF	$ 2.52	$ 64,743.84	$ 3.08	$ 79,131.36	$ 143,875.20
	Remove Flashing, Gutters Roof Leaders & Roof Drain Caps	878	LF	$ 5.04	$ 4,425.12	$ 6.16	$ 5,408.48	$ 9,833.60
	Remove Concrete Fill @ Gutter	798	LF	$ 3.15	$ 2,513.70	$ 3.85	$ 3,072.30	$ 5,586.00
	Temp. Roof Weather Protection	5000	SF	$ 2.52	$ 12,600.00	$ 3.08	$ 15,400.00	$ 28,000.00
	Provide Standing Seam Metal Roof System	25692	SF	$ 7.56	$ 194,231.52	$ 9.24	$ 237,394.08	$ 431,625.60
	EPDM Membrane Under Roof 12' Above End Of Metal Roof	11844	SF	$ 5.04	$ 59,693.76	$ 6.16	$ 72,959.04	$ 132,652.80
	Lined Gutter:							
	EPDM Membrane (Over Parapet)	10857	SF	$ 5.04	$ 54,719.28	$ 6.16	$ 66,879.12	$ 121,598.40
	Rigid Tapered Insulation	5659	SF	$ 3.15	$ 17,825.85	$ 3.85	$ 21,787.15	$ 39,613.00
	Metal Gutter @ Courtyard Side Of Roof	60	LF	$ 59.85	$ 3,591.00	$ 73.15	$ 4,389.00	$ 7,980.00
	Metal Leader	25	LF	$ 47.25	$ 1,181.25	$ 57.75	$ 1,443.75	$ 2,625.00
	subtotal:							**$ 923,389.60**
078100	**Fireproofing**							
	Spray On Fireproofing @ 1st Floor Girders	20000	SF	$ 6.30	$ 126,000.00	$ 7.70	$ 154,000.00	$ 280,000.00
	Spray On Fireproofing @ New BH Structure	264	SF	$ 6.30	$ 1,663.20	$ 7.70	$ 2,032.80	$ 3,696.00
	Subtotal:							**$ 283,696.00**
078400	**Firestopping**							
	Firestopping	1	LS	$ 6,300.00	$ 6,300.00	$ 7,700.00	$ 7,700.00	$ 14,000.00
	Subtotal:							**$ 14,000.00**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

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Bidder: ADAM'S EUROPEAN CONTRACTING,INC

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Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
079000	**Caulking & Sealing/ Joint Sealants**							
	Provide Caulking & Sealants:							
	Brick To Stone (Included w/ repointing)							
	Masonry To Cast Iron	688	LF	$ 10.08	$ 6,935.04	$ 12.32	$ 8,476.16	$ 15,411.20
	Windows & Doors	4104	LF	$ 10.08	$ 41,368.32	$ 12.32	$ 50,561.28	$ 91,929.45
	Paving To Building	895	LF	$ 11.34	$ 10,149.30	$ 13.86	$ 12,404.70	$ 22,554.00
	Misc. Interior Sealants	1	LS	$ 3,150.00	$ 3,150.00	$ 3,850.00	$ 3,850.00	$ 7,000.00
	Subtotal:							**$ 136,894.65**
08 00 00	**Openings**							
081100	**Metal Doors and Frames**							
	HM Doors Frames & Hardware							
	3'-0" x 7'-0"	10	EA	$ 2,835.00	$ 28,350.00	$ 3,465.00	$ 34,650.00	$ 63,000.00
	6'-0" x 7'-0"	2	Pair	$ 3,465.00	$ 6,930.00	$ 4,235.00	$ 8,470.00	$ 15,400.00
	8'-0" x 7'-0"	1	Pair	$ 4,095.00	$ 4,095.00	$ 5,005.00	$ 5,005.00	$ 9,100.00
	Doors in Existing Frames	4	EA	$ 945.00	$ 3,780.00	$ 1,155.00	$ 4,620.00	$ 8,400.00
	Secure Existing Door Locked Position @ Office 113	1	EA	$ 315.00	$ 315.00	$ 385.00	$ 385.00	$ 700.00
	Provide New Panic Hardware on Existing Doors	46	EA	$ 292.50	$ 13,455.00	$ 357.50	$ 16,445.00	$ 29,900.00
	Remove & Replace Lever HW @ Existing Doors	46	EA	$ 225.00	$ 10,350.00	$ 275.00	$ 12,650.00	$ 23,000.00
	subtotal:							**$ 149,500.00**
083100	**Access Doors**							
	3'-0" x 4'-0" Access Door	1	EA	$ 850.50	$ 850.50	$ 1,039.50	$ 1,039.50	$ 1,890.00
	subtotal:							**$ 1,890.00**
083330	**Coilling Doors & Grilles**							
	Remove & Replace OH Door & Gates	2	EA	$ 22,050.00	$ 44,100.00	$ 26,950.00	$ 53,900.00	$ 98,000.00
	subtotal:							**$ 98,000.00**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
085110.	**Aluminium Windows**							
	Remove Aluminium Windows & Prepare Opening for Louver	2	EA	$ 2,551.50	$ 5,103.00	$ 3,118.50	$ 6,237.00	$ 11,340.00
	Provide New Aluminium Windows Aprox. 8'-6" x 8'-6" W/ 8SF Louver	2	EA	$ 6,795.00	$ 13,590.00	$ 8,305.00	$ 16,610.00	$ 30,200.00
	subtotal:							**$ 41,540.00**
085630	**Storm Windows**							
	Provide Interior Storm Windows Approx. 8'-6" x 8'-6"	3	EA	$ 6,615.00	$ 19,845.00	$ 8,085.00	$ 24,255.00	$ 44,100.00
	subtotal:							**$ 44,100.00**
086300	**Skylights, Metal Framed & Custom**							
	Remove & Replace Skylights on Existing Curb	255	SF	$ 59.85	$ 15,261.75	$ 73.15	$ 18,653.25	$ 33,915.00
	Repair Smaller Skylight @ Lower Roof	1	EA	$ 1,575.00	$ 1,575.00	$ 1,925.00	$ 1,925.00	$ 3,500.00
	subtotal:							**$ 37,415.00**
088000	**Glass & Glazing (Included w/85110 & 085630)**							
089000	**Louvers and Vents**							
	Louvers @ Cellar	84	SF	$ 56.70	$ 4,762.80	$ 69.30	$ 5,821.20	$ 10,584.00
	Louver @ 1st FL	78	SF	$ 56.70	$ 4,422.60	$ 69.30	$ 5,405.40	$ 9,828.00
	subtotal:							**$ 20,412.00**
Division 9	**Finishes**							
092400	**Portland Cement Plaster (Stucco)**							
	Remove Corrugated Metal Wall Panels	8175	SF	$ 3.15	$ 25,751.25	$ 3.85	$ 31,473.75	$ 57,225.00
	Stucco	8410	SF	$ 15.12	$ 127,159.20	$ 18.48	$ 155,416.80	$ 282,576.00
	subtotal:							**$ 339,801.00**
092900	**Gypsum Drywall**							
	Gypsum Board partitions (Taped & Spacled)							
	Type 4 Z Channel @ 24" O/C, 1 1/2" Ridg. Insul. & 1 Layer 5/8" GWB One Side	2088	SF	$ 7.56	$ 15,785.28	$ 9.24	$ 19,293.12	$ 35,078.40

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Type 5 & 6 2 1/2" Metal Studs @ 16" O/C & 1 Layer 5/8" GWB One Side	1678	SF	$ 9.45	$ 15,857.10	$ 11.55	$ 19,380.90	$ 35,238.00
	Type 7 3 5/8" Metal Studs @ 16" O/C & 1 Layer 5/8" GWB Each Side	144	SF	$ 11.34	$ 1,632.96	$ 13.86	$ 1,995.84	$ 3,628.80
	GWB Fascia & Sofit @ Rm. 210	144	SF	$ 10.08	$ 1,451.52	$ 12.32	$ 1,774.08	$ 3,225.60
	2hr Rated Suspended Ceilings @ Stairs	220	SF	$ 12.60	$ 2,772.00	$ 15.40	$ 3,388.00	$ 6,160.00
	subtotal:							**$ 83,330.80**
093000	**Tile Work**							
	Ceramic Tile Flooring							
	Rm 108	90	SF	$ 17.64	$ 1,587.60	$ 21.56	$ 1,940.40	$ 3,528.00
	Rm 116	50	SF	$ 17.64	$ 882.00	$ 21.56	$ 1,078.00	$ 1,960.00
	Rm 210	410	SF	$ 17.64	$ 7,232.40	$ 21.56	$ 8,839.60	$ 16,072.00
	Ceramic Tile Base	180	LF	$ 12.60	$ 2,268.00	$ 15.40	$ 2,772.00	$ 5,040.00
	Ceramic Tile Wainscott	301	SF	$ 17.64	$ 5,309.64	$ 21.56	$ 6,489.56	$ 11,799.20
	subtotal:							**$ 38,399.20**
095100	**Accoustical Treatment**							
	ACT Ceilings							
	2'x2'	3521	SF	$ 12.60	$ 44,364.60	$ 15.40	$ 54,223.40	$ 98,588.00
	2'x4'	475	SF	$ 15.12	$ 7,182.00	$ 18.48	$ 8,778.00	$ 15,960.00
	subtotal:							**$ 114,548.00**
096500	**Resilient Flooring**							
	VCT Flooring @ Rm 110 & Main Office	582	SF	$ 8.82	$ 5,133.24	$ 10.78	$ 6,273.96	$ 11,407.20
	Vinyl Base							
	Rm. 110 & Main Office	121	LF	$ 5.04	$ 609.84	$ 6.16	$ 745.36	$ 1,355.20
	Rm 204	210	LF	$ 5.04	$ 1,058.40	$ 6.16	$ 1,293.60	$ 2,352.00
	subtotal:							**$ 15,114.40**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
096700	**Special Flooring**							
	Fluid Applied Traffic Coating	15694	SF	$ 10.08	$ 158,195.52	$ 12.32	$ 193,350.08	$ 351,545.60
	subtotal:							**$ 351,545.60**
099000	**Painting**							
	Paint New Masonry Walls, Inc. Column Encasement	18000	SF	$ 1.89	$ 34,020.00	$ 2.31	$ 41,580.00	$ 75,600.00
	Water Resistant Wall Coatings	1107	SF	$ 3.15	$ 3,487.05	$ 3.85	$ 4,261.95	$ 7,749.00
	Provide Vapor Coating @ Inside of Exterior Wall @ Rm 204	3791	SF	$ 15.75	$ 59,708.25	$ 19.25	$ 72,976.75	$ 132,685.00
	Paint GWB Walls & Ceilings	2848	SF	$ 15.75	$ 44,856.00	$ 19.25	$ 54,824.00	$ 99,680.00
	Field Finish Existing Stairs	25	RFT	$ 47.25	$ 1,181.25	$ 57.75	$ 1,443.75	$ 2,625.00
	Field Finish all New Doors & Frames	16	LVS	$ 157.50	$ 2,520.00	$ 192.50	$ 3,080.00	$ 5,600.00
	Patch & Paint Plaster Walls @ Rm 110	1357	SF	$ 1.89	$ 2,564.73	$ 2.31	$ 3,134.67	$ 5,699.40
	Scar Patch Walls & Removed Partitions	50	SF	$ 6.30	$ 315.00	$ 7.70	$ 385.00	$ 700.00
	Patch & Repair Wall & Door Opening @ Roof Acess 401	2	LOC	$ 220.50	$ 441.00	$ 269.50	$ 539.00	$ 980.00
	Misc. Finishes & Restoration	1	LS	$ 6,300.00	$ 6,300.00	$ 7,700.00	$ 7,700.00	$ 14,000.00
	Pavement Markings	1	LS	$ 4,725.00	$ 4,725.00	$ 5,775.00	$ 5,775.00	$ 10,500.00
	subtotal:							**$ 355,818.40**
Division 10	**Specialties**							
102100	**Toilet & Shower Compartments**							
	Toilet Partitions							
	Standard	3	EA	$ 17.64	$ 52.92	$ 21.56	$ 64.68	$ 117.60
	Handicap	1	EA	$ 17.64	$ 17.64	$ 21.56	$ 21.56	$ 39.20
	Grab Bars	5	EA	$ 220.50	$ 1,102.50	$ 269.50	$ 1,347.50	$ 2,450.00
	Prefabricated Shower Compartments	4	EA	$ 3,150.00	$ 12,600.00	$ 3,850.00	$ 15,400.00	$ 28,000.00
	subtotal:							**$ 30,606.80**
102213	**Wire Mesh Partitions**							
	Wire Mesh Partitions on 3rd Floor	1071	SF	$ 22.05	$ 23,615.55	$ 26.95	$ 28,863.45	$ 52,479.00
	Gates in Wire Mesh Partitions	2	EA	$ 1,575.00	$ 3,150.00	$ 1,925.00	$ 3,850.00	$ 7,000.00
	subtotal:							**$ 59,479.00**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID PRESENTATION FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING,INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
102800	**Toilet Accessories**							
	Mirror							
	5'-0" x 3'-6"	4	EA	$ 337.50	$ 1,350.00	$ 412.50	$ 1,650.00	$ 3,000.00
	2'-0" x 3'-6"	4	EA	$ 337.50	$ 1,350.00	$ 412.50	$ 1,650.00	$ 3,000.00
	Paper Towel Dispenser/Disposal	10	EA	$ 94.50	$ 945.00	$ 115.50	$ 1,155.00	$ 2,100.00
	Toilet Paper Dispenser	10	EA	$ 94.50	$ 945.00	$ 115.50	$ 1,155.00	$ 2,100.00
	subtotal:							**$ 10,200.00**
105100	**Lockers and Benches**							
	Lockers and Benches	15	EA	$ 283.50	$ 4,252.50	$ 346.50	$ 5,197.50	$ 9,450.00
	Benches	5	EA	$ 283.50	$ 1,417.50	$ 346.50	$ 1,732.50	$ 3,150.00
	subtotal:							**$ 12,600.00**
109000	**Miscallaneous Specialties**							
	Sinage @ Front Elevation of Building (NYC Enviromental Protection)	1	LS	$ 7,560.00	$ 7,560.00	$ 9,240.00	$ 9,240.00	$ 16,800.00
	subtotal:							**$ 16,800.00**
Division 14	**Conveying Systems**							
140000	**Wheelchair Lift**							
	Platform Chair Lift	1	LS	$ 28,350.00	$ 28,350.00	$ 34,650.00	$ 34,650.00	$ 63,000.00
	subtotal:							**$ 63,000.00**
Division 21	**Fire Suppression**							
211200	**Fire Suppression Standpipe System (Existing System)**							
211300	**Fire Suppression**							
	6" Blk Stl Pipe Stan Wt Grooved		LF					
	5" Blk Stl Pipe Stan Wt Grooved		LF					
	4" Blk Stl Pipe Sch 40 Grooved		LF					
	3" Blk Stl Pipe Sch 40 Grooved		LF					

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S SUB-BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	2 1/2" Blk Stl Pipe Sch 40 Grooved		LF					
	2" Blk Stl Pipe Sch 40 T&C		LF					
	2 1/2" Galvanized Stl Pipe Sch 40 Grooved		LF					
	Grooved Fittings		EA					
	125# Cast Iron Fittings		EA					
	Galvanized Grooved Fittings		EA					
	Hangers		EA					
	125# Cast Iron Gate Valves		EA					
	Autamitic Ball Drios		EA					
	Siamese Fire Department Connections		EA					
	Floor Control Valve Assemblies		EA					
	Double Inrterlock Preaction Valves w/ Aire Compressor, Panel		EA					
	Dry Valves w. Compressor, Air Maintenance Device		EA					
	Floor Sleeves		EA					
	Fire Pump, 1,000 GPM w/ Jockey Pump, Control Panel		EA					
	165 Degree Upright Heads w/ Branch Piping		EA					
	165 Degree Concealed Heads w/ Branch Piping		EA					
	165 Degree Pendant Heads w/ Branch Piping		EA					
	165 Degree Upright Heads w/ Galvanized Branch Piping		EA					
	Tamper Switches		EA					
	Flow Switches		EA					
	Spare Head Cabinets		EA					
	Hydraulic Calculation, Coordination Drawings		LS					
	Drain, Fill and Vent		MH					
	Subtotal:	1	LS	$ 388,125.00	$ 388,125.00	$ 474,375.00	$ 474,375.00	$ 862,500.00
Division 22	**Plumbing**							
220500	**Common Work Results fore Plumbing**							
	Floor Sleeves		EA		$ 1,293.75		$ 1,581.25	$ 2,875.00
	Exterior Wall Sleeves		EA		$ 2,070.00		$ 2,530.00	$ 4,600.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Dielectric Fittings		EA		$ 815.06		$ 996.19	$ 1,811.25
	Escutcheons		EA		$ 414.00		$ 506.00	$ 920.00
	Excavation, Bedding, and Backfill	750	LF	$ 20.25	$ 15,187.50	$ 24.75	$ 18,562.50	$ 33,750.00
	Concrete Cutting and Rough Patching	750	LF	$ 51.75	$ 38,812.50	$ 63.25	$ 47,437.50	$ 86,250.00
	Large Bore Pipe Demolition/ Underground		LF		$ 892.69		$ 1,091.06	$ 1,983.75
	Medium Bore Pipe Demolition		LF		$ 4,062.38		$ 4,965.13	$ 9,027.50
	Floor Drain Demolition		EA		$ 543.38		$ 664.13	$ 1,207.50
	Support Storm Leaders During Slab Removal		LOC		$ 388.13		$ 474.38	$ 862.50
	Subtotal:							**$ 143,287.50**
220513	**Electric Motors and Motor Controllers (Included w/ 223000)**							
220523	**General-Duty Valves for Plumbing Piping**							
	Curb Stop w/ Box		EA		$ 750.38		$ 917.13	$ 1,667.50
	125# Cast Iron Gate Valves		EA		$ 2,191.61		$ 2,678.64	$ 4,870.25
	150# Bronze Ball Valves		EA		$ 815.06		$ 996.19	$ 1,811.25
	125# Cast Iron Check Valves		EA		$ 2,427.08		$ 2,966.43	$ 5,393.50
	125# Cast Iron Lubricated Plug Cocks		EA		$ 1,436.06		$ 1,755.19	$ 3,191.25
	Subtotal:							**$ 16,933.75**
220529	**Hangers & Supports**							
	Pipe Hangers							
	Steel Pipe Stablizers		EA		$ 104,793.75		$ 128,081.25	$ 232,875.00
	Subtotal:							**$ 232,875.00**
220553	**Identification and Painting for Plumbing Piping and Equipment**							
	Valve Tags, Pipe Identification		LS		$ 719.33		$ 879.18	$ 1,598.50
	Subtotal:							**$ 1,598.50**
220577	**Plumbing System Test**							
	System Testing		MH		$ 3,105.00		$ 3,795.00	$ 6,900.00
	Subtotal:							**$ 6,900.00**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: *Rehabilitation and Upgrade of DEP Shaft Maintenance Building*
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
220700	**Plumbing Insulation**							
	Fiberglass Pipe Insulation		LF		$ 14,076.00		$ 17,204.00	$ 31,280.00
	Hydripneumatic Tank Insulation		LS					
	Water Meter Insulation		LS					
	Subtotal:							**$ 31,280.00**
221000	**Pipe, Tube, and Fittings (Included w/ 221100)**							
221100	**Facility Water Distribution**							
	8" Ductile Iron Pipe		FT		$ 20,829.38		$ 25,458.13	$ 46,287.50
	Mechanical Joint Fittings		EA					
	Thrust Block		EA					
	6" Blk Stl Pipe Stan Wt Grooved		FT		$ 17,129.25		$ 20,935.75	$ 38,065.00
	4" L Copper Tubing		FT		$ 4,266.79		$ 5,214.96	$ 9,481.75
	3" L Copper Tubing		FT		$ 4,126.03		$ 5,042.92	$ 9,168.95
	2" L Copper Tubing		FT		$ 4,166.39		$ 5,092.26	$ 9,258.65
	2 1/2" L Copper Tubing		FT		$ 3,079.13		$ 3,763.38	$ 6,842.50
	1 1/2 in Dia L Copper Tubing		FT		$ 116.44		$ 142.31	$ 258.75
	1 1/4 In Dia L Copper Tubing		FT		$ 1,989.79		$ 2,431.96	$ 4,421.75
	1 In Dia L Copper Tubing		FT		$ 2,057.06		$ 2,514.19	$ 4,571.25
	3/4 In Dia L Copper Tubing		FT		$ 4,195.89		$ 5,128.31	$ 9,324.20
	1/2 In Dia L Copper Tubing		FT		$ 1,208.36		$ 1,476.89	$ 2,685.25
	Grooved Fittings		EA		$ 23,658.03		$ 28,915.37	$ 52,573.40
	Wrought Copper Fittings		EA		$ 17,013.85		$ 20,794.70	$ 37,808.55
	Connections to Existing		EA		$ 1,301.51		$ 1,590.74	$ 2,892.25
	Double Check Detector Assembly		EA		$ 3,138.64		$ 3,836.11	$ 6,974.75
	125# Cast Iron Reduced Pressure Zone Backflow Preventor		EA		$ 1,164.38		$ 1,423.13	$ 2,587.50
	150# Bronze Reduced Pressure Zone Backflow Preventor		EA		$ 1,280.81		$ 1,565.44	$ 2,846.25
	150# Bronze Double Check Backflow Preventor		EA		$ 310.50		$ 379.50	$ 690.00
	Water Meter		EA		$ 1,242.00		$ 1,518.00	$ 2,760.00
	Thermostatic Mixing Valves		EA		$ 993.60		$ 1,214.40	$ 2,208.00
	Braided Stainless Flexible Connection		EA		$ 646.88		$ 790.63	$ 1,437.50

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabiljtation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Hydropneumatic Tank		EA					
	Electric Water Heater 6 Gallon, 1.5 KW ASME Rated		EA		$ 685.69		$ 838.06	$ 1,523.75
	Electric Water Heater 120 Gallon, 24 KW, ASME Rated		EA		$ 3,886.43		$ 4,750.08	$ 8,636.50
	Flushing and disinfection		LS		$ 2,484.00		$ 3,036.00	$ 5,520.00
	Solder, Flux, Gas, Etc		LS		$ 232.88		$ 284.63	$ 517.50
	Temporary Piping							
	- 1/2 In Dia L Copper Tubing		FT		$ 377.78		$ 461.73	$ 839.50
	- 3/4 In Dia L Copper Tubing		FT		$ 470.93		$ 575.58	$ 1,046.50
	- 2 In Dia L Copper Tubing		FT		$ 1,311.86		$ 1,603.39	$ 2,915.25
	- Wrough Copper Fittings		EA		$ 1,073.81		$ 1,312.44	$ 2,386.25
	- Pipe Hangers		EA		$ 328.61		$ 401.64	$ 730.25
	- Connections to Existing		EA		$ 970.31		$ 1,185.94	$ 2,156.25
	Subtotal:							**$ 279,415.50**
221300	**Facility Sanitarty Sewerage**							
	6" XH Cast Iron Pipe		LF		$ 892.69		$ 1,091.06	$ 1,983.75
	4" XH Cast Iron Pipe		LF		$ 2,345.31		$ 2,866.49	$ 5,211.80
	XH Cast Iron Fittings		EA		$ 2,891.79		$ 3,534.41	$ 6,426.20
	Cleanout Deckplates		EA		$ 957.38		$ 1,170.13	$ 2,127.50
	4" No Hub Cast Iron Pipe		LF		$ 7,457.69		$ 9,114.96	$ 16,572.65
	3" No Hub Cast Iron Pipe		LF		$ 799.54		$ 977.21	$ 1,776.75
	2" No Hub Cast Iron Pipe		LF		$ 4,347.00		$ 5,313.00	$ 9,660.00
	1 1/2" No Hub Cast Iron Pipe		LF					
	4" Galvanized Stl Pipe Sch 40 T&C		LF		$ 1,182.49		$ 1,445.26	$ 2,627.75
	No Hub Cast Iron Fittings		LF		$ 11,043.97		$ 13,498.18	$ 24,542.15
	150# Galvanized Maleable Fittings		EA		$ 6,028.88		$ 7,368.63	$ 13,397.50
	House Traps		EA		$ 918.56		$ 1,122.69	$ 2,041.25
	FD B Floor Drains		EA		$ 1,474.88		$ 1,802.63	$ 3,277.50
	FB C Floor Drains		EA		$ 5,917.61		$ 7,232.64	$ 13,150.25
	Roof Drain		EA					
	Overflow Drain		EA					
	2" Funnel		EA		$ 284.63		$ 347.88	$ 632.50
	12" Wide by 14 Foor Heavy Duty Trench Drain		EA		$ 5,102.55		$ 6,236.45	$ 11,339.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Connections to Existing		EA		$ 1,151.44		$ 1,407.31	$ 2,558.75
	Gaskets, No Hub Couplings, Lubricants, Etc.		LS		$ 2,302.88		$ 2,814.63	$ 5,117.50
	Facility Fuel System							
	6" Blk Stl Pipe Stan Wt PE		FT					
	4" Blk Stl Pipe Sch 40 PE		FT		$ 7,833.40		$ 9,574.15	$ 17,407.55
	3" Blk Stl Pipe Sch 40 PE		FT		$ 6,744.58		$ 8,243.37	$ 14,987.95
	2" Blk Stl Pipe Sch 40 PE		FT		$ 4,546.24		$ 5,556.51	$ 10,102.75
	2" Millwrapped Blk Stl Pipe Sch 40 PE		FT					
	150# Buttweld Fittings		EA		$ 10,220.63		$ 12,491.88	$ 22,712.50
	Gas Meter		EA		$ 1,759.50		$ 2,150.50	$ 3,910.00
	Pressure Regulator		EA		$ 1,759.50		$ 2,150.50	$ 3,910.00
	Rod, Gas, Lubricants, Etc.		LS		$ 8,396.44		$ 10,262.31	$ 18,658.75
	Subtotal:							**$ 214,132.30**
223000	**Plumbing Equipment, Specialties, & Accessories**							
	Duplex Domestic Water Pressure Booster Pump 70 GPM @ 139 Ft, 7.5 HP w/158 Gallon Cushion Tank		EA		$ 14,080.14		$ 17,209.06	$ 31,289.20
	SP 1,2 Duplex Sump Pump 100 GPM @ 30 Ft, 3/8 HP		LS		$ 30,636.00		$ 37,444.00	$ 68,080.00
	Duplex Sweage Ejectors 50 GPM 2 HP w/ Basin, Control Panels		EA		$ 47,920.50		$ 58,569.50	$ 106,490.00
	High Pressure Hosebibb		EA		$ 802.13		$ 980.38	$ 1,782.50
	Oil Interceptor w/ Sand Trap		EA		$ 13,041.00		$ 15,939.00	$ 28,980.00
	50 Foot Hose Reel		EA		$ 993.60		$ 1,214.40	$ 2,208.00
	Truck Wash System		EA					
	Fire Protection Floor Control Access Ladders		EA					
	Vibration Isolation (Booster Pump)		LS		$ 1,397.25		$ 1,707.75	$ 3,105.00
	Subtotal:							**$ 241,934.70**
224000	**Plumbing Fixtures**							
	Service Sinks		EA		$ 4,165.88		$ 5,091.63	$ 9,257.50

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Wall Mounted Water Closet w/ Carrier		EA		$ 6,649.88		$ 8,127.63	$ 14,777.50
	Wall Mounter Lavatories w/ Carrier		EA		$ 4,582.46		$ 5,600.79	$ 10,183.25
	Shower Basesm Duverters		EA		$ 993.60		$ 1,214.40	$ 2,208.00
	Subtotal:							**$ 36,426.25**
Division 23	Heating, Ventilating, and Air Conditioning							
230500	**Common Work Results for HVAC**							
	Temporary Heat		LS					
	Valve Tags, Pipe/ Duct Identification		LS		$ 2,432.25		$ 2,972.75	$ 5,405.00
	Subtotal:							**$ 5,405.00**
230513	**Common Motor Requirements for HVAC Equipment (Included w/ 236450)**							
230548	**Vibration and Seismic Controls for HVAC Piping and equipment**							
	Seismic Restraint, Certification		LS		$ 5,692.50		$ 6,957.50	$ 12,650.00
	Subtotal:							**$ 12,650.00**
230593	**Testing, Adjusting & Balancing for HVAC**							
	Testing Adjusting & Balancing		MH		$ 4,140.00		$ 5,060.00	$ 9,200.00
	Subtotal:							**$ 9,200.00**
230700	**HVAC Insulation**							
	1/2" Fiberglass Pipe Insulation		LF		$ 217.35		$ 265.65	$ 483.00
	1 1/2" Thk Duct Board		SF		$ 33,637.50		$ 41,112.50	$ 74,750.00
	1 1/2" Thk Duct Wrap		SF		$ 33,637.50		$ 41,112.50	$ 74,750.00
	Subtotal:							**$ 149,983.00**
230900	**Instrumentation and Control for HVAC & Sequence of Operation**							
	AC 1,2 Packaged Air Conditioners 2,000 CFM w/ DX Electrical Coils		PTS		$ 14,407.20		$ 17,608.80	$ 32,016.00
	MAU 1,2 Gas Fired Makeup Air Unit 17,500 CFM 1,039 MBH		PTS		$ 12,854.70		$ 15,711.30	$ 28,566.00

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	MAU 3 Gas Fire Makeup Air Unit 19,000 CFM, 1,228 MBH		PTS		$ 6,427.35		$ 7,855.65	$ 14,283.00
	TX 1 Roof Fan 900 CFM @ .1", 1/2 HP		PTS		$ 3,213.68		$ 3,927.83	$ 7,141.50
	EX 1 Roof Fan 35,000 CFM @ 1", 15 HP		PTS		$ 3,213.68		$ 3,927.83	$ 7,141.50
	EX 2 Roof Fan 19,000 CFM @.75", 7.5 HP		PTS		$ 3,213.68		$ 3,927.83	$ 7,141.50
	Electrical Unit Heater 3.1 KW		PTS		$ 3,213.68		$ 3,927.83	$ 7,141.50
	UH A Electrical Unit Heater 4.8 KW		PTS		$ 24,974.55		$ 30,524.45	$ 55,499.00
	UH B Electrical Unit Heater 6 KW		PTS		$ 9,641.03		$ 11,783.48	$ 21,424.50
	Carbon Monoxide Detection Systems (2 Panels, 10 Dectectors)		LS		$ 16,560.00		$ 20,240.00	$ 36,800.00
	Subtotal:							**$ 217,154.50**
232113	**Hydronic Piping & Accessories**							
	1" L Copper Tubing		LF		$ 2,468.48		$ 3,017.03	$ 5,485.50
	3/4" L Copper Tubing		LF		$ 2,277.00		$ 2,783.00	$ 5,060.00
	Wrought Copper Fittings		EA		$ 711.56		$ 869.69	$ 1,581.25
	Hangers		EA		$ 1,630.13		$ 1,992.38	$ 3,622.50
	Solder, Flux, Gas, Etc.		LS		$ 414.00		$ 506.00	$ 920.00
	Subtotal:							**$ 16,669.25**
233113	**Metal Ducts**							
	Galvanized Ductwork		LBS		$ 208,552.50		$ 254,897.50	$ 463,450.00
	Double Walled Plenums		SF		$ 19,561.50		$ 23,908.50	$ 43,470.00
	Double Walled Flue Pipe w/ Ftgs, Accessories		LF		$ 19,406.25		$ 23,718.75	$ 43,125.00
	Canvas Flexible Connection		EA		$ 3,079.13		$ 3,763.38	$ 6,842.50
	Fire Dampers		SF		$ 16,818.75		$ 20,556.25	$ 37,375.00
	Volume Dampers		EA		$ 9,108.00		$ 11,132.00	$ 20,240.00
	Kynar Finish Louvers		EA		$ 4,178.81		$ 5,107.44	$ 9,286.25
	Fire Smopke Dampers		EA		$ 3,881.25		$ 4,743.75	$ 8,625.00
	Motorized Dampers		EA		$ 17,595.00		$ 21,505.00	$ 39,100.00
	Subtotal:							**$ 671,513.75**

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING,INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
233117	**Acoustical Treatment**							
	1" Thk Duct Liner		SF					
	Subtotal:							$ -
233713	**Diffusers, Regusters, and Grilles**							
	Garage Ventilation Grilles		EA					
	Garage Exhaust Grilles		EA					
	Bathroom Exhaust Grilles		EA					
	Supply Air Diffusers		EA					
	Return Air Grilles		EA					
	Subtotal:							$ -
236450	**HVAC Equipment**							
	AC 1,2 Packaged Air Conditioners 2,000 CFM w/ DX Electrical Coils		EA					
	MAU 1,2 Gas Fired Makeup Air Unit 17,500 CFM 1,039 MBH		EA					
	MAU 3 Gas Fire Makeup Air Unit 19,000 CFM, 1,228 MBH		EA					
	TX 1 Roof Fan 900 CFM @ .1" 1/2 HP		EA					
	EX 1 Roof Fan 35,000 CFM @ 1", 15 HP		EA					
	EX 2 Roof Fan 19,000 CFM @ .75", 7.5 HP		EA					
	Electrical Unit Heater 3.1 KW		EA					
	UH A Electrical Unit Heater 4.8 KW		EA					
	UH B Electrical Unit Heater 6 KW		EA					
	CP Air Conditioning Condensate Pumps w/ Reserviors		EA					
	Magnetic Motor Starters		EA					
	Subtotal:							$ -
Division 26	**Electrical**							
	Work preformed by Subcontrcator							
Division 26	Electrical							
260500	**Common Work Results for Electrical (Included w/ 260519, 262400, 262416, 262923, 283111)**							

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING,INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
260519	**Basic Materials and Methods**							
	Light Fixtures:							
	Allowances, no schedule provided							
	Type LA 2x4 Layin Dir/Indir		EA		$ 981.70		$ 1,199.85	$ 2,181.55
	Type LD 8' Indust		EA		$ 250.99		$ 306.76	$ 557.75
	Type LE Wall mt fluor		EA		$ 418.66		$ 511.69	$ 930.35
	Type LE EM wall mt fluor		EA		$ 5,042.52		$ 6,163.08	$ 11,205.60
	Relocate Exist 8' Fixt		EA		$ 317.23		$ 387.72	$ 704.95
	Emergency Battery w/ 2 Heads		EA		$ 317.23		$ 387.72	$ 704.95
	Exit		EA		$ 2,858.67		$ 3,493.93	$ 6,352.60
	Emergency Battery/ Exit Combo		EA		$ -		$ -	$ -
	Type LB linear fluor		LF		$ 2,761.38		$ 3,375.02	$ 6,136.40
	Type LC linear slot fluor		LF		$ 1,325.32		$ 1,619.83	$ 2,945.15
	TYPE LF linear slot fluor		LF		$ 331.20		$ 404.80	$ 736.00
	Branch Circuitry:							
	3/4" Emt, 4#12		LF		$ 23,287.50		$ 28,462.50	$ 51,750.00
	MC Cable		LF		$ 4,036.50		$ 4,933.50	$ 8,970.00
	Wiring Devices:							
	Switches		EA		$ 433.15		$ 529.40	$ 962.55
	Occupancy Sensor		EA		$ 491.11		$ 600.24	$ 1,091.35
	Duplex Receptacles		EA		$ 108.68		$ 132.83	$ 241.50
	Receptacles Quad		EA		$ 803.16		$ 981.64	$ 1,784.80
	Receptacles GFI		EA		$ 116.96		$ 142.95	$ 259.90
	Receptacles GFI WP		EA		$ 789.19		$ 964.56	$ 1,753.75
	Heater conn		EA		$ 191.99		$ 234.66	$ 426.65
	Manual Snap Switch Starter		EA		$ 641.70		$ 784.30	$ 1,426.00
	Tel/Data Backbox, Stubup		EA		$ 24,430.14		$ 29,859.06	$ 54,289.20

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Power Circuitry:							
	3/4" Rigid, 4#10		LF		$ 8,447.67		$ 10,324.93	$ 18,772.60
	2 1/2" Rigid, 4 4/0		LF		$ 3,293.89		$ 4,025.86	$ 7,319.75
	3" Rigid, 3 500 Mcm		LF		$ 4,844.32		$ 5,920.83	$ 10,765.15
	3 1/2" Rigid, 4 500 Mcm		LF		$ 13,741.70		$ 16,795.41	$ 30,537.10
	3/4" Emt, 4#10		LF		$ 28,042.29		$ 34,273.91	$ 62,316.20
	1" Emt, 4#6		LF		$ 1,305.14		$ 1,595.17	$ 2,900.30
	1 1/4" Emt, 4#4		LF		$ 6,690.76		$ 8,177.59	$ 14,868.35
	1 1/4" Emt, 4#3		LF		$ 6,799.95		$ 8,311.05	$ 15,111.00
	2 1/4" Emt, 4 4/0		LF		$ 1,305.14		$ 1,595.17	$ 2,900.30
	Miscallaneous Rough		LS		$ 160,425.00		$ 196,075.00	$ 356,500.00
	Temp Power and Lighting		LS		$ 136,102.50		$ 166,347.50	$ 302,450.00
	Misc Demo, Removals		LS		$ 134,550.00		$ 164,450.00	$ 299,000.00
	Subtotal:							**$ 1,278,851.75**
262400	**120/ 208V Electric Service System:**							
	1600 AMP SEB, Replace Ex		EA		$ 1,514.21		$ 1,850.70	$ 3,364.90
	1600 AMP CT Cabinet		EA		$ 1,177.83		$ 1,439.57	$ 2,617.40
	800 AMP Service Disconnect		EA		$ 1,612.01		$ 1,970.24	$ 3,582.25
	1200 Amp Fire pump Service Disconnect		EA		$ 1,732.59		$ 2,117.61	$ 3,850.20
	Refeed Ex 400 AMP Meter		EA		$ 31,305.65		$ 38,262.46	$ 69,568.10
	Subtotal:							**$ 82,982.85**
262416	**Electrical Distribution System:**							
	225 AMP Panel Board		EA		$ 14,080.14		$ 17,209.06	$ 6,696.00
	800 AMP Main Distr Board		EA		$ 14,080.14		$ 17,209.06	$ 12,526.00
	Subtotal:							**$ 19,222.00**
262923	**Electrical Power Equipment:**							
	Heat Trace Power Conn		EA		$ 89.53		$ 109.42	$ 198.95
	30.1 Amp Disconnect		EA		$ 603.92		$ 738.13	$ 1,342.05
	30 Amp Disconnect		EA		$ 497.32		$ 607.83	$ 1,105.15

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: *Rehabilitation and Upgrade of DEP Shaft Maintenance Building*
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	60/2 Amp Disconnect		EA		$ -		$ -	$ -
	60 Amp Disconnect		EA		$ 12,937.50		$ 15,812.50	$ 28,750.00
	100 Amp Disconnect		EA		$ 1,558.19		$ 1,904.46	$ 3,462.65
	Install Nema 0 Starter FBO		EA		$ 396.41		$ 484.50	$ 880.90
	Install Nema 3 Starter FBO		EA		$ 743.13		$ 908.27	$ 1,651.40
	Install Fire Pump CP FBO		EA		$ 1,732.59		$ 2,117.61	$ 3,850.20
	Install Jockey Pump CP FBO		EA		$ 1,732.59		$ 2,117.61	$ 3,850.20
	Install 60 Amp Control Panel FBO		EA		$ 1,732.59		$ 2,117.61	$ 3,850.20
	Subtotal:							**$ 48,941.70**
Division 28	**Electronic Safety and Security**							
283111	**Automatic Fire Alarm System**							
	Fire Alarm							
	3/4" RGS, FA Cable		LF		$ 47,219.29		$ 57,712.46	$ 104,931.75
	Pull Station		EA		$ 71.93		$ 87.92	$ 159.85
	Smoke Detector		EA		$ 1,173.17		$ 1,433.88	$ 2,607.05
	Duct Detector		EA		$ 1,443.83		$ 1,764.68	$ 3,208.50
	Zone Indicating Panel		EA		$ 1,082.61		$ 1,323.19	$ 2,405.80
	Central Equipment FACP		LS		$ 12,497.63		$ 15,274.88	$ 27,772.50
	Fu Cutout		EA		$ 248.40		$ 303.60	$ 552.00
	Misc Connections		EA		$ 5,826.02		$ 7,120.69	$ 12,946.70
	Subtotal:							**$ 154,584.15**
Division 32	**Exterior Improvements**							
	Sawcut & Remove Sidewalk for New Street Pits	350	SF	$ 4.14	$ 1,449.00	$ 5.06	$ 1,771.00	$ 3,220.00
	New Street Trees	7	EA	$ 776.25	$ 5,433.75	$ 948.75	$ 6,641.25	$ 12,075.00
	Granite pavers Blocks	210	LF	$ 18.11	$ 3,803.63	$ 22.14	$ 4,648.88	$ 8,452.50
	Topsoil Fill @ New Steet Tree Pits	18	CY	$ 12.94	$ 232.88	$ 15.81	$ 284.63	$ 517.50
	Mulch @ New Street Pits 3" Thich	4	CY	$ 7.76	$ 31.05	$ 9.49	$ 37.95	$ 69.00
	Excavate for the Pits & Dispose of Excess Material	23	CY	$ 108.68	$ 2,499.53	$ 132.83	$ 3,054.98	$ 5,554.50

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: ADAM'S EUROPEAN CONTRACTING.INC

DDC ID: EP6-KENT2
Sponsor Agency: DEP

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Material & Labor
	Extend Existing Tree Pits							
	Protect existing Trees Item 594.01	80	LF	$ 7.76	$ 621.00	$ 9.49	$ 759.00	$ 1,380.00
	Sawcut Remove Sidewalk	100	SF	$ 4.14	$ 414.00	$ 5.06	$ 506.00	$ 920.00
	Granite Block Pavers	120	LF	$ 18.11	$ 2,173.50	$ 22.14	$ 2,656.50	$ 4,830.00
	Excavate for Extended Tree Pits & Dispose of Excess Material	13	CY	$ 108.68	$ 1,412.78	$ 132.83	$ 1,726.73	$ 3,139.50
	Mulch @ extended Street Pits 3" Thick	2	CY	$ 7.76	$ 15.53	$ 9.49	$ 18.98	$ 34.50
	Topsoil Fill @ Extended Tree Pits	11	CY	$ 12.94	$ 142.31	$ 15.81	$ 173.94	$ 316.25
	Sawcut & Remove Sidewalk for Combined Water Service Work	92	SF	$ 2.59	$ 238.05	$ 3.16	$ 290.95	$ 529.00
	Replace Sidewalk After Combined Water Service Work is Complete	92	SF	$ 7.76	$ 714.15	$ 9.49	$ 872.85	$ 1,587.00
	Remove/Replace Existing Steel Faced Curbs	8	LF	$ 43.99	$ 351.90	$ 53.76	$ 430.10	$ 782.00
	SubTotal							**$ 43,406.75**
TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK								**$ 16,343,962.00**

Qualification Form

Project ID: EP6-KENT2

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: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: GROVER CLEVELAND HS Q

Location of Project: 2187 HINROD STREET, RIDGEWOOD, NY 11385

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

Name: (NYCSCA) OCTAV BOTE2

Title: PROJECT OFFICER Phone Number: (718) 472-8379

Brief description of work completed: EXTERIOR MASONRY WORK ROOF REPLACEMENT

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

Amount of Contract: 29,147,910.34

Date of Completion: 11/30/2010

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Name of Contractor: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: BEACH CHANNEL HS

Location of Project: 100-00 BEACH CHANNEL DR, ROCKAWAY PARK, NY 11694

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

Name: (NYCSCA) REINALDO ROSALES

Title: PROJECT OFFICER Phone Number: (718) 472-8237

Brief description of work completed: EXTERIOR MASONRY, ROOF REPLACEMENT, REPAIR PLASTER & PAINT

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

Amount of Contract: 27,302,090.46

Date of Completion: 10/13/2011

Qualification Form

Project ID: EP6-KENT2

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: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: PS 183 QUEENS

Location of Project: 2-45 BEACH 79TH ST, ROCKAWAY BEACH, NY 11693

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

Name: (NYCSCA) FELIX HUE HANG

Title: PROJECT OFFICER Phone Number: (718) 752-5904

Brief description of work completed: EXTERIOR MASONRY, PARAPET REPLACEMENT, REPAIR PLASTER AND PAINT

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

Amount of Contract: 8,259,900.00

Date of Completion: 10/10/2012

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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: _____

Qualification Form

Project ID: EP6-KENT2

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: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: CITY HALL

Location of Project: 260 BROADWAY, NEW YORK, NY 10007

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

Name: HALIM JABBOUR (HILL INTERNATIONAL)

Title: PROJECT OFFICER, Phone Number: (212) 244-3700

Brief description of work completed: INTERIOR DEMOLITION AND NEW INSTALLATION, COOPER ROOF, REMOVAL AND INSTALLATION OF CONCRETE, CAST IRON FENCE RESTORATION, STEEL CATWALK INSTALLATION, HANDICAP RAMP

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

Amount of Contract: 15,701,000.00

Date of Completion: N/A

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Name of Contractor: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: PS 89 BRONX

Location of Project: 980 MACE AVE, BRONX, NY 10469

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

Name: (NYC SCA) GAMAL SELIM

Title: PROJECT OFFICER, Phone Number: (718) 231-5178

Brief description of work completed: EXTERIOR MASONRY, GFRC REPLACEMENT, STRUCTURAL STEEL REPLACEMENT, NEW STEEL AT PARAPET, PLASTER & PAINT, ROOF REPLACEMENT

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

Amount of Contract: 11,500,000.00

Date of Completion: 12/13/2007

Qualification Form

Project ID: EP6-KENT2

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: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: PS 183 QUEENS

Location of Project: 2-45 BEACH 79TH ST, ROCKAWAY BEACH, NY 11693

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

Name: (NYCSCA) FELIX HUE MANG

Title: PROJECT OFFICER Phone Number: (718) 752-5904

Brief description of work completed: CONCRETE REPLACEMENT, STRUCTURAL STEEL REPLACEMENT, EXTERIOR MASONRY, CLEANING, ROOF REPLACEMENT NEW RAMP AND RAILING, PLASTER, PAINT, NEW WALLS, HVAC UPGRADE

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

Amount of Contract: 8,259,900.00

Date of Completion: 10/10/2012

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Name of Contractor: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: EVANDER CHILDS HS (BRONX)

Location of Project: 800 EAST GUN HILL RD, BRONX, NY 10467

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

Name: (NYCSCA) MICHAEL KOPANOS

Title: PROJECT OFFICER Phone Number: (646) 210 1417

Brief description of work completed: EXTERIOR MASONRY & CLEANING, ROOF REPLACEMENT, SHEET METAL ROOF, CAST IRON, RAMP RESTORATION DECORATIVE IRON FENCE, CAST IRON FRAME RESTORATION, SKYLIGHTS, CONCRETE

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

Amount of Contract: 34,193,789.48

Date of Completion: 09/16/2009

Qualification Form

Project ID: EP6-KENT2

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: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: GROVER CLEVELAND HS Q

Location of Project: 21 27 HIMROD STREET, RIDGEWOOD, NY 11385

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

Name: (NYCSCA) OCTAV BOTEZ

Title: PROJECT OFFICER Phone Number: (718) 472-8379

Brief description of work completed: DEMOLITION, EXTERIOR MASONRY AND CLEANING, STRUCTURAL STEEL REPLACEMENT, RAILINGS, CONCRETE, CAST IRON BULLETIN BOARDS, ROOF REP.

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

Amount of Contract: 20,147,910.34

Date of Completion: 11/30/2010

****

Name of Contractor: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: BEACH CHANNEL HS

Location of Project: 100-00 BEACH CHANNEL DR, ROCKAWAY PARK, NY 11694

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

Name: (NYCSCA) REINALDO ROSALES

Title: PROJECT OFFICER Phone Number: (718) 472-8237

Brief description of work completed: DEMOLITION, MASONRY RESTORATION AND CLEANING, ROOF REPLACEMENT, STRUCTURAL STEEL REPLACEMENT, SKYLIGHTS, PLASTER & PAINT,

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

Amount of Contract: 27,302,090.46

Date of Completion: 10/13/2011

Qualification Form

Project ID: EP6-KENT2

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: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: BEACH CHANNEL HS - SEA WALL

Location of Project: 100-00 BEACH CHANNEL DR, ROCKAWAY PARK, NY 11694

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

Name: (NYCSCA) REINALDO ROSALES

Title: PROJECT OFFICER Phone Number: (718) 472-8237

Brief description of work completed: CONCRETE SEA WALL REPLACEMENT, CONCRETE PAVEMENT & CURBS REPLACEMENT, SITE RESTORATION,

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

Amount of Contract: 7,695,000.00

Date of Completion: 11/24/2010

****

Name of Contractor: ADAM'S EUROPEAN CONTRACTING INC.

Name of Project: MANHATTAN CENTER OF SCIENCE AND MATHEMATICS

Location of Project: 260 PLEASANT AVE, NEW YORK, NY 10029

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

Name: (NYCSCA) ROBERT MURPHY

Title: PROJECT OFFICER Phone Number: (718) 752-5681

Brief description of work completed: ROOF REPLACEMENT, EXTERIOR MASONRY, SHEET METAL ROOFING, STRUCTURAL STEEL, STONES, CAST IRON PANELS RESTORATION, SITE WORK.

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

Amount of Contract: 6,973,800.00

Date of Completion: 11/30/2007

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
PS 102K 211 72ND STREET BROOKLYN, NY 11209	CIP	$3,167,000.00	10.11.2012	BASSAM ABDU NYCSCA - PO (718) 752-5319	SUSAN DOBAN ARCHITECTS SUSAN DOBAN (718) 797-1041
PS 183Q 2-45 BEACH 79TH STREET ROCKAWAY BEACH, NY 11693	CIP	$8,259,900.00	10.10.2012	FELIX HUE HANG NYCSCA - PO (718) 752-5904	NYCSCA ENGINEER UNIT JERRY MOY (718) 472-8747
PS 206M 508 E. 120TH STREET NEW YORK, NY 10035	CIP	$5,882,870.00	08.06.2012	GREGORY KOETBEL NYCSCA - PO (718) 752-5708	MACRAE-GIBSON ARCHITECTS YUKO SUZUIKE (212) 294-2940
CLEVELAND HS Q 2127 HANROD STREET RIDGEWOOD, NY 11385	CIP	$5,817,000.00	04.09.2012	OCTAV BOTEZ NYCSCA - PO (718) 472-8374	HDR / DANIEL FRANKFURT BRIAN LEMM (212) 542-6000
PS 370K 3000 WEST 1ST STREET BROOKLYN, NY 11224	CIP	$6,920,000.00	01.09.2012	BRUNO GENARI NYCSCA - PO (917) 709-5634	NYCSCA ENGINEER UNIT NARSHINH PATEL (718) 472-8547
JHS 57 K 125 STUYVESANT AVENUE BROOKLYN, NY 11221	CIP	$8,712,996.00	12.02.2011	CHIAL HENNEDY NYCSCA - PO (718) 752-5727	NYCSCA ENGINEER UNIT NARSHINH PATEL (718) 472-8547
BEACH CHANNEL HS Q 100-00 BEACH CHANNEL DRIVE ROCKAWAY PARK, NY 11694	CIP	$7,695,000.00	11.24.2010	RETNALDO ROSALES NYCSCA - PO (718) 472-8237	AMMANN & WHITNEY KARL SMITH (212) 462-8500

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
BRYANT HS (D) 48-10 31ST AVE, LONG ISLAND CITY, NY 11103	CIP	$11,463,000.00	$2,017,269.00	3%	03/02/14	NYCSCA-PO: M. FURMAN (718) 752-5756	NYCSCA: NARSHINH PATEL (718) 472-8093
PS 94Q 41-77 LITTLE NECK PKWY. LITTLE NECK, NY 11363	CIP	$3,661,000.00	$1,213,000.00	14%	02/04/14	NYCSCA-PO: DOREL SERBAN (347) 672-6775	CSA GROUP RAFAEL FERNANDEZ (212) 677-0777
PS 97 K 1855 STILLWELL AVE BROOKLYN, NY 11223	CIP	$10,362,000.00	$2,587,700.00	47%	08/18/14	NYCSCA-PO: BRUNO GENARI (917) 709-5634	NELLIGENT WHITE ARCHITECTS MONIKA SASNARY 212-670-0500
JHS 185Q 147-26 25TH DR. FLUSHING, NY 11354	CIP	$9,924,000.00	$4,718,280.00	75%	11/03/14	NYCSCA-PO: DOREL SERBAN (347) 672-6775	NYCSCA JOSE RICARDO 718-472-8000
IS 34 S1 528 ACADEMY AVE STATEN ISLAND, NY 10307	CIP	$5,885,000.00	$391,712.00	67%	09/09/15	NYCSCA-PO NARESH BHAGAT (718) 752-5786	NELLIGENT WHITE ARCHITECTS ANDREW BARWICK 212 675 0500
PS 41K 411 THATFORD AVE BROOKLYN, NY 11212	CIP	$5,868,000.00	$650,000.00	88%	01/05/15	NYCSCA-PO; YURIY MEDOVOY (917) 417-1036	RKT&B ARCHITECTS & PLANNERS ALBERT ARNOV (212) 807-9500

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
AUGUST MARTIN HS 156-10 BAISLEY BLVD. JAMAICA, NY 11434	CIP	$ 15,144,000.00	$ 2,095,819.00	89%	07/05/15	NYCSCA-PO: REINALDO ROSALES (718) 472-8237	SHIGEHIRO SHISHIDO (212)-420-1160
NYPD CENTRAL REPAIR SHOP 53-01 58TH STREET WOODSIDE, NY 11377	GENERAL CONSTRUCTION WORK	$ 4,834,122.00	$ 634,418.00	43%	08/01/14	NYCDDC-PM VLADIMIR ROVENSKY (718) 391-1152	THORNTON TOMASETTI HENRI C. GUERON (917) 661-7800
CITY HALL 260 BROADWAY NEW YORK, NY 10007	GENERAL CONSTRUCTION WORK	$ 15,701,000.00	$ 2,300,000.00	48%	01/15/15	NYCDDC HILL INTERNATIONAL HALIM JABBOUR 212-244-3700	BEYER BLINDER BELLE ARCHITECTS & PLANNERS (212) 777-7800

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
CAMPUS MAGNET HS (P) 207-01 116TH AVE CAMBRIA HEIGHTS, NY 11411	CIP	$19,780,000.00	FEBRUARY 2014	NYCSCA (718) 472-8000	di DOMINICO + PARTNERS LLP. 212-337-0400
RAVENSWOOD HOUSES	GENERAL CONSTRUCTION	$39,823,387.76	FEBRUARY 2014	NYCHA (212) 306-3000	URS CORPORATION 212-896-0136

Tax ID #: 11-3210275 APT E-

PIN#: 85014B0027

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 #	11-3210275	**FMS Vendor ID #**	N/A
Business Name	ADAM'S EUROPEAN CONTRACTING INC.	**Contact Person**	ADAM SKARZYNSKI
Address	589 JOHNSON AVE, BROOKLYN, NY 11237		
Telephone #	(718) 417-9000	**Email**	ADAMSEURO@ADAMSEURO.COM

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

PRIME CONTRACTOR ADOPTING AGENCY M/WBE PARTICIPATION GOALS

☐ **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
$ 16,976,962.00	X		=	$ 3,395,392.40 Line 2

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

☐ **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

Tax ID #: 11-3210275

APT E-PIN#: 85014B0027

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? % ~~38~~ = $
48 M.S 12/18/2013

✓ **Scopes of Subcontract Work** (MBE)

Enter brief description of the type(s) and dollar value of subcontracts for 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. HVAC-(02/14-07/16) - [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. ELECTRICAL (02/14-07/16) - ~~1,784~~ 861 [illegible]
6. METALS - MBE (02/14-06/15) - $100,000 [illegible]
7. MASONRY - MBE (02/14-06/15) $ [illegible]
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.

M.S [illegible]

Section V: Vendor Certification and Required Affirmations

I hereby:

1) acknowedge 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 Yo9rk (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 maerial 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 modfied 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	[signature]	Date	12/06
Print Name		Title	

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: EP6-KENT2

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:**

VARSITY PLUMBING AND (&S) HEATING, INC. NON
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ 1,209,846.00

2. **HVAC CONTRACTOR:**

CHAPMAN & EVANS, INC. NON
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ 1,082,575.50

3. **ELECTRICAL CONTRACTOR:**

SANCO ELECTRIC CORP. NON
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ 1,584,582.45

BIDDER'S SIGNATURE: The Bidder must sign this form in the space provided below:

Name of Bidder: ADAM'S EUROPEAN CONTRACTING INC.

By: M. Skarzynski
Signature of Partner or Corporate Officer

Print Name: MALGORZATA SKARZYNSKI

Title: CEO

BID BOND 1
FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we,
ADAM'S EUROPEAN CONTRACTING INC.
589 JOHNSON AVENUE, BROOKLYN, NY 11237

hereinafter referred to as the "Principal", and
ARCH INSURANCE COMPANY
ONE LIBERTY PLAZA, FLOOR 29, NEW YORK, NY 10006

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% OF BID AMOUNT
($_____), 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 REHABILITATION AND UPGRADE OF DEP

SHAFT MAINTENANCE BUILDING EXTERIOR AND INTERIOR RENOVATIONS CONTRACT #EP6-KENT2

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 fulfullment 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 21ST day of NOVEMBER, 2013.

(Seal) ADAM'S EUROPEAN CONTRACTING INC. (L.S.)

Principal

By: M. Skarzyńska

MALGORZATA SKARZYNSKI - CEO

(Seal) ARCH INSURANCE COMPANY

Surety

By:

GLENN GLUBIAK, ATTORNEY - IN - FACT

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of NEW YORK County of KINGS ss:
On this 26 TH 6TH day of DECEMBER 2013, before me personally came MALGORZATA STARZYNSKI to me known, who, being by me duly sworn, did depose and say that she resides at 951 LOCUST AVE, BOHEMIA, NY 11716 that she is the CEO of ADAM'S EUROPEAN CONTRACTING INC. the corporation described in and which executed the foregoing instrument; that she 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 she signed ~~his~~ her name thereto by like order.

DOMINIKA D MAJEWSKA
Notary Public - State of New York
NO. 01MA6226908
Qualified in Queens County
My Commission Expires Aug 16, 2014

Dominika Majewska
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

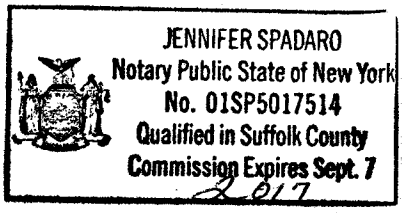
ACKNOWLEDGEMENT OF SURETY

State of NEW YORK)

:ss:

County of SUFFOLK)

On the 21st day of NOVEMBER, 2013, before me personally came GLENN GLUBIAK to me known, who, being by me duly sworn, did depose and say the (s)he resides at COMMACK, NEW YORK that (s)he is the Attorney-In-Fact of ARCH INSURANCE COMPANY the Corporation described in and which executed the above instrument; that (s)he knows the seal of said Corporation; that one of the seals affixed by order of the Board of Directors of said Corporation; and that (s)he signed his/her name thereto by like order.



Jennifer Spadaro

Notary Public

AIC 0000057426

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON BLUE BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for Mortgage, Note, Loan, Letter of Credit, Bank Deposit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWER OF ATTORNEY

Know All Persons By These Presents:

That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the "Company") does hereby appoint:

David A. Goldstein, Frank Strcich and Glenn Glubiak of Smithtown, NY (EACH)

its true and lawful Attorney(s)in-Fact, to make, execute, seal, and deliver from the date of issuance of this power for and on its behalf as surety, and as its act and deed:

Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars ($90,000,000.00).

This authority does not permit the same obligation to be split into two or more bonds in order to bring each such bond within the dollar limit of authority as set forth herein.

The execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and amply to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on September 15, 2011, true and accurate copies of which are hereinafter set forth and are hereby certified to by the undersigned Secretary as being in full force and effect:

"VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitations set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process."

This Power of Attorney is signed, sealed and certified by facsimile under and by authority of the following resolution adopted by the unanimous consent of the Board of Directors of the Company on September 15, 2011:

VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, and the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile on any power of attorney or bond executed pursuant to the resolution adopted by the Board of Directors on September 15, 2011, and any such power so executed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company.

ARCH INSURANCE COMPANY
STATEMENT OF FINANCIAL CONDITION
December 31, 2012

Assets

Cash in Banks	$	142,123,391
Bonds owned		1,626,957,843
Stocks		335,746,944
Premiums in course of collection		199,715,124
Accrued interest and other assets		392,357,134
Total Assets	$	2,696,900,436

Liabilities

Reserve for losses and adjustment expenses	$	1,138,208,564
Reserve for unearned premiums		328,958,704
Ceded reinsurance premiums payable		179,607,905
Amounts withheld or retained by company for account of others		173,229,865
Reserve for taxes, expenses and other liabilities		313,412,183
Total Liabilities		2,133,417,221
Surplus as regards policyholders		563,483,215
Total Surplus and Liabilities	$	2,696,900,436

By: _____ Attest: _____
Senior Vice President, Chief Financial Officer and Treasurer
Senior Vice President, General Counsel and Secretary

State of New York)
) SS
County of Hudson)

Thomas James Ahern, Senior Vice President, Chief Financial Officer and Treasurer and Patrick Kenneth Nails, Senior Vice President, General Counsel and Secretary being duly sworn, of ARCH INSURANCE COMPANY, Missouri; and that the foregoing is a true and correct statement of financial condition of said company, as of December 31, 2012.

Subscribed and sworn to before me, this 12 day of March, 2013.

Notary Public

Traci Fischer

Traci Fischer
Notary Public, State of New Jersey
No. 2409092
Qualified in Hudson County
Commission Expires May 31, 2016

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: ADAM'S EUROPEAN CONTRACTING INC.

DDC Project Number: EP6 - KENT 2

Company Size: _____ Ten (10) employees or less

✓ Greater than ten (10) employees

✓ Company has previously worked for DDC

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) SCAFFOLDING	✓	✓

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
2012	0.75	
2011	0.75	
2010	0.75	

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:

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

NO — Contractor has had an incident requiring OSHA notification within 8 hours (i.e., fatality, or hospitalization of three or more employees).

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.

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

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
2012	422,656 (US)	3.31
2011	534,854	0.75
2010	428,611	0.9

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)

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

DDC Project Number(s): _____

_____

Yes Accident on previous DDC Project(s).

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].

Date: 12/06 (DAS) 2013 By: M. Skarzynska
(Signature of Owner, Partner, Corporate Officer)

Title: MALGORZATA SKARZYNSKI - CEO

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 2012

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name ADAM'S EUROPEAN CONTRACTING INC.

City BROOKLYN State NY

Identify the person				Describe the case		Classify the case											
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
						Death	Days away from work	Remained at work: Job transfer or restriction	Remained at work: Other record-able cases	Away From Work (days)	On job transfer or restriction (days)	(M) Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
						(G)	(H)	(I)	(J)	(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)
1	KEITH R LOPACKI	BRICKLAYER 3RD YEAR APPRENTICE	07/31	PS 29K JOBSITE 425 HENRY STREET, BROOKLYN, NY 11201	BACK AND ELBOW (SIDE UNKNOWN)		X			UNKOWN-UNION WORKER NEVER RETURNED		X					
2	DARIUSZ HUS	MASON TENDER	08/09	PS 29K JOBSITE 425 HENRY STREET, BROOKLYN, NY 11201	BACK STRAIN		X			UNKOWN-UNION WORKER NEVER RETURNED		X					
3	ADAM SOKOLOWSKI	ROOFER	08/13	PS 42Q JOBSITE 488 BEACH 66TH STREET, ARVERNE, NY 11692	HAND BURN			X			25		X				
4	CHRISTOPHER HOOKS	MASON TENDER	09/10	PS 21K JOBSITE 180 CHAUNCEY STREET, BROOKLYN, NY 11233	HAND CUT		X			UNKOWN-UNION WORKER NEVER RETURNED		X					
5	CLAUDIO ERAS	POINTER	10/03	PS 21K JOBSITE 180 CHAUNCEY STREET, BROOKLYN, NY 11233	BACK INJURY		X			UNKOWN-UNION WORKER NEVER RETURNED		X					
6	JEREMIAH GREEN	POINTER	10/05	PS 21K JOBSITE 180 CHAUNCEY STREET, BROOKLYN, NY 11233	COLLAR BONE INJURY		X			UNKOWN-UNION WORKER NEVER RETURNED		X					
7	LUIS M GUAMAN	MASON TENDER	11/30	PS 153K JOBSITE 1970 HOMECREST AVENUE, BROOKLYN, NY 11229	LEFT INDEX FINGER CUT		X			UNKOWN-UNION WORKER NEVER RETURNED		X					
8	JUSTIN M JACOBSEN	MASON TENDER 1ST YEAR APPRENTICE	12/18	BRYANT HS JOBSITE 48-10 31ST AVENUE LONG ISLAND CITY, NY 11103	RIGHT KNEE SPRAIN		x			UNKOWN-UNION WORKER NEVER RETURNED		X					
					Page totals	*0*	*7*	*1*	*0*	*0*	*25*	*7*	*1*	*0*	*0*	*0*	*0*

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Injury (1) | Skin Disorder (2) | Respiratory Condition (3) | Poisoning (4) | Hearing Loss (5) | All other illnesses (6)

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 2011

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name ADAM'S EUROPEAN CONTRACTING INC.

City BROOKLYN State NY

Identify the person				Describe the case		Classify the case											
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
						Death	Days away from work	Remained at work		Away From Work (days)	On job transfer or restriction (days)	(M) Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
								Job transfer or restriction	Other record-able cases								
						(G)	(H)	(I)	(J)	(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)
1	ROBERT PAKSTIS	CARPENTER	06/08	BREUKELEN HOUSES PROJECT: 106-22 FARRAGUT ROAD, BROOKLYN, NY	RIGHT KNEE AND LEFT PINKY FINGER		X			62		X					
2	WOJCIECH SMIAROWSKI	ROOFER	08/04	PS 14SI PROJECT: 100 TOMPKINS AVENUE, STATEN ISLAND, NY 10304	MILD RIGHT EYE DAMAGE		X			2							X
					Page totals	*0*	*2*	*0*	*0*	*64*	*0*	*1*	*0*	*0*	*0*	*0*	*1*

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Injury (1) | Skin Disorder (2) | Respiratory Condition (3) | Poisoning (4) | Hearing Loss (5) | All other illnesses (6)

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 2010

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name ADAM'S EUROPEAN CONTRACTING INC.

City BROOKLYN State NY

Identify the person			Describe the case			Classify the case						Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	CHECK ONLY ONE box for each case based on the most serious outcome for that case:								(M)					
						Death	Days away from work	Remained at work				Away From Work (days)	On job transfer or restriction (days)	Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
								Job transfer or restriction	Other record-able cases										
						(G)	(H)	(I)	(J)			(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)
1	CEZARY P ZALEWSKI	POINTER	08/11	PS 64Q	INJURY TO THE RIGHT SHOULDER			x					30	x					
2	LESROY S DAVID	MASON TENDER	10/21	JHS 45M	STRUCK BY, FALL FROM GRADE		x					3		x					
					Page totals	*0*	*1*	*1*	*0*			*3*	*30*	*2*	*0*	*0*	*0*	*0*	*0*

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Injury (1) | Skin Disorder (2) | Respiratory Condition (3) | Poisoning (4) | Hearing Loss (5) | All other illnesses (6)

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
___Locally based Business Enterprise
___Emerging Business Enterprise

2a. If you are certified as an **MBE, WBE,** or **LBE**, 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 ___

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

5. 11-3210275 — Employer Identification Number or Federal Tax I.D./
ADAMSEURO@ADAMSEURO.COM — Email Address

6. ADAM'S EUROPEAN CONTRACTING INC.
Company Name

7. 589 JOHNSON AVE, BROOKLYN, NY 11237
Company Address and Zip Code

8. ADAM SKARZYNSKI — Chief Operating Officer
(718) 417-9000 — Telephone Number

9. ADAM SKARZYNSKI — Designated Equal Opportunity Compliance Officer
(If same as Item #7, write "same")
(718) 417-9000 — Telephone Number

10. ADAM SKARZYNSKI
Name of Prime Contractor and Contact Person
(If same as Item #5, write "same")

11. Number of employees in your company: APPX. 30 (25)

12. Contract information:

(a) NYC DDC
Contracting Agency (City Agency)

(b) 16,976,962.00
Contract Amount

(d) 85014B0027
Procurement Identification Number (PIN)

(e) N/A
Contract Registration Number (CT#)

(f) N/A
Projected Commencement Date

(g) N/A
Projected Completion Date

(h) Description and location of proposed contract:
REHABILITATION AND UPGRADE OF DEP SHAFT MAINTENANCE BUILDING - 356 FLUSHING AVE, BROOKLYN, NY 11215

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

If yes, attach a copy of certificate. ATTACHED

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

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.

15. 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 V If yes,

Date submitted: _____
Agency to which submitted: _____
Name of Agency Person: _____
Contract No: _____
Telephone: _____

16. 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 V

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.

17. 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 V No___ N4-BCA

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

PART II: DOCUMENTS REQUIRED EXEMPT THROUGH 01/14/2016

18. 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?

19. 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___

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

_____

_____

21. 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.

_____

_____

22. 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.

_____

_____

23. Does the company have a current affirmative action plan(s) (AAP)
_____Minorities and Women
_____Individuals with handicaps
_____Other. Please specify _____

24. 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.

25. 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.

26. 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.

27. 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).

_____

_____

28. 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) MALGORZATA SKARZYNSKI 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.

ADAM'S EUROPEAN CONTRACTING INC.
Contractor's Name

CHRISTINE LICHOTA — FINANCIAL CONTROLLER
Name of person who prepared this Employment Report — Title

MALGORZATA SKARZYNSKI — CEO
Name of official authorized to sign on behalf of the contractor — Title

(718) 417-9000
Telephone Number

M. Skarzynska — 12/06/2013
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/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 6TH day of DECEMBER 20 13

Dominika Majewska — M. Skarzynska — 12/06/2013
Notary Public — Authorized Signature — Date

DOMINIKA D MAJEWSKA
Notary Public - State of New York
NO. 01MA6226908
Qualified in Queens County
My Commission Expires Aug 16, 2014

Revised 1/13
FOR OFFICIAL USE ONLY: File No.

Small Business
Services

Robert W. Walsh
Commissioner

January 15, 2013

Ms. Monika Drazek
Adam's European Contracting, Inc.
589 Johnson Avenue
Brooklyn, NY 11237

RE: Department of Design and Construction; Project No. CITYHALL2; subcontractor to Hill International, Inc.; Roofing and General Construction Work at City Hall; Contract Value: $15,701,000; Borough of Manhattan; **File Number 27405C**; and

Project No: PO79BMADS; NYPD Central Repair Shop Roof Replacement; Borough of Queens; Contract Value: $4,834,122; **File Number 213CY002**; Certificate of Approval

Dear Ms. Drazek:

The Department of Small Business Services/Division of Labor Services (DLS) has concluded that Adam's European Contracting, Inc. (Adam's European Contracting) has met the equal employment opportunity requirements of the City of New York, as stated in Executive Order No. 50 (1980) as amended (E.O. 50), its implementing Rules (Rules), and Chapter 56 of the City Charter (Chapter 56). Consequently, DLS has notified the Department of Design and Construction of this determination.

Contingent upon Adam's European Contracting's ongoing compliance with E.O. 50 and Chapter 56, this approval shall be effective for the three (3) year period commencing on January 15, 2013 and terminating January 14, 2016. **This determination for a three-year approval only exempts contractors from completing the policy and procedure section of the Employment Report on future contracts within this three-year period**. However, Employment Report workforce information must be submitted for each new project. Also, Adam's European Contracting must regularly submit to DLS the Monthly Workforce Utilization Table and Monthly Payroll Records as explained during the pre-award conference on January 8, 2013.

It is important that Adam's European Contracting, as a New York City applicant/contractor, provide equal employment opportunity for all employees and applicants for employment.

Please direct all correspondence to Elsie Ross, Project Manager. Should you have any questions regarding this letter, you may call Ms. Ross at (212) 513-6347 or email eross@sbs.nyc.gov.

Very truly yours,

Helen Wilson
Executive Director
Division of Labor Services

cc: Lorraine Holley
Elsie Ross
File

Division of Labor Services

FORM C. CURRENT WORKFORCE
TRADE CLASSIFICATION CODES

(J) JOURNEY LEVEL WORKERS (A) APPRENTICE
(H) HELPER (TRN) TRAINEE (TOT) TOTAL BY COLUMN

FOR EACH TRADE CURRENTLY ENGAGED BY YOUR COMPANY, ENTER THE CURRENT WORKFORCE FOR MALES AND FEMALES BY TRADE CLASSIFICATION ON THE CHARTS BELOW.

Trade: **ADMINISTRATIVE**

Union Affiliation, If applicable: **N/A**

Total (Col. # 1-10): **30**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): **2**

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

	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	**18**		**1**	**1**		**10**				
H										
A										
TRN										
TOT	**18**		**1**	**1**		**10**				

Trade: **ROOFERS**

Union Affiliation, If applicable: **LOCAL 8**

Total (Col. # 1-10): **20**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): **1**

Total Female (Col. # 6-10):

	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	**20**									
H										
A										
TRN										
TOT	**20**									

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

UNIONS & EXISTING WORKFORCE

NYC Small Business Services | Division of Labor Services

FORM C. CURRENT WORKFORCE
TRADE CLASSIFICATION CODES

(J) JOURNEY LEVEL WORKERS (A) APPRENTICE
(H) HELPER (TRN) TRAINEE (TOT) TOTAL BY COLUMN

FOR EACH TRADE CURRENTLY ENGAGED BY YOUR COMPANY, ENTER THE CURRENT WORKFORCE FOR MALES AND FEMALES BY TRADE CLASSIFICATION ON THE CHARTS BELOW.

Trade: **POINTERS**

Union Affiliation, If applicable: **LOCAL 1**

Total (Col. # 1-10): **102**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): **26**

Total Female (Col. # 6-10):

MALES

	(1) White (Non-Hisp.)	(2) Black (Non-Hisp.)	(3) Hisp.	(4) Asian	(5) Native Amer.
J	**74**	**5**	**14**	**5**	
H					
A	**2**		**2**		
TRN					
TOT	**76**	**5**	**16**	**5**	

FEMALES

	(6) White (Non-Hisp.)	(7) Black (Non-Hisp.)	(8) Hisp.	(9) Asian	(10) Native Amer.
J					
H					
A					
TRN					
TOT					

Trade: **BRICKLAYERS**

Union Affiliation, If applicable: **LOCAL 1**

Total (Col. # 1-10): **78**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): **16**

Total Female (Col. # 6-10):

MALES

	(1) White (Non-Hisp.)	(2) Black (Non-Hisp.)	(3) Hisp.	(4) Asian	(5) Native Amer.
J	**58**	**9**	**6**		
H					
A	**4**	**1**			
TRN					
TOT	**62**	**10**	**6**		

FEMALES

	(6) White (Non-Hisp.)	(7) Black (Non-Hisp.)	(8) Hisp.	(9) Asian	(10) Native Amer.
J					
H					
A					
TRN					
TOT					

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

UNIONS & EXISTING WORKFORCE

NYC Small Business Services | Division of Labor Services

FORM C. CURRENT WORKFORCE
TRADE CLASSIFICATION CODES

(J) JOURNEY LEVEL WORKERS (A) APPRENTICE
(H) HELPER (TRN) TRAINEE (TOT) TOTAL BY COLUMN

FOR EACH TRADE CURRENTLY ENGAGED BY YOUR COMPANY, ENTER THE CURRENT WORKFORCE FOR MALES AND FEMALES BY TRADE CLASSIFICATION ON THE CHARTS BELOW.

Trade: **PLASTERS**

Union Affiliation, If applicable: **LOCAL 1**

Total (Col. # 1-10): 8

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): 8

Total Female (Col. # 6-10):

MALES

	(1) White (Non-Hisp.)	(2) Black (Non-Hisp.)	(3) Hisp.	(4) Asian	(5) Native Amer.
J	8				
H					
A					
TRN					
TOT	8				

FEMALES

	(6) White (Non-Hisp.)	(7) Black (Non-Hisp.)	(8) Hisp.	(9) Asian	(10) Native Amer.
J					
H					
A					
TRN					
TOT					

Trade: **COMMON LABORERS**

Union Affiliation, If applicable: **LOCAL 731**

Total (Col. # 1-10): 3

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10):

Total Female (Col. # 6-10):

MALES

	(1) White (Non-Hisp.)	(2) Black (Non-Hisp.)	(3) Hisp.	(4) Asian	(5) Native Amer.
J	3				
H					
A					
TRN					
TOT	3				

FEMALES

	(6) White (Non-Hisp.)	(7) Black (Non-Hisp.)	(8) Hisp.	(9) Asian	(10) Native Amer.
J					
H					
A					
TRN					
TOT					

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

UNIONS & EXISTING WORKFORCE

Division of
Labor Services

FORM C. CURRENT WORKFORCE
TRADE CLASSIFICATION CODES

(J) JOURNEY LEVEL WORKERS (A) APPRENTICE
(H) HELPER (TRN) TRAINEE (TOT) TOTAL BY COLUMN

FOR EACH TRADE CURRENTLY ENGAGED BY YOUR COMPANY, ENTER THE CURRENT WORKFORCE FOR MALES AND FEMALES BY TRADE CLASSIFICATION ON THE CHARTS BELOW.

Trade: **SHEET METAL WORKER**

Union Affiliation, If applicable: **LOCAL 28**

Total (Col. # 1-10): **3**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10):

Total Female (Col. # 6-10):

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

Trade: **MASON TENDER**

Union Affiliation, If applicable: **LOCAL 79**

Total (Col. # 1-10): **96**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): **43**

Total Female (Col. # 6-10):

	MALES (1) White (Non-Hisp.)	(2) Black (Non-Hisp.)	(3) Hisp.	(4) Asian	(5) Native Amer.	FEMALES (6) White (Non-Hisp.)	(7) Black (Non-Hisp.)	(8) Hisp.	(9) Asian	(10) Native Amer.
J	48	12	17	4						
H										
A	5	6	4							
TRN										
TOT	53	18	21	4						

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

UNIONS & EXISTING WORKFORCE

NYC Small Business Services | Division of Labor Services

FORM C. CURRENT WORKFORCE
TRADE CLASSIFICATION CODES

(J) JOURNEY LEVEL WORKERS (A) APPRENTICE
(H) HELPER (TRN) TRAINEE (TOT) TOTAL BY COLUMN

FOR EACH TRADE CURRENTLY ENGAGED BY YOUR COMPANY, ENTER THE CURRENT WORKFORCE FOR MALES AND FEMALES BY TRADE CLASSIFICATION ON THE CHARTS BELOW.

Trade: **OPERATING ENGINEER**

Union Affiliation, If applicable: **LOCAL 14**

Total (Col. # 1-10): **4**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): **1**

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

MALES

	(1) White (Non-Hisp.)	(2) Black (Non-Hisp.)	(3) Hisp.	(4) Asian	(5) Native Amer.
J	3		1		
H					
A					
TRN					
TOT	3		1		

FEMALES

	(6) White (Non-Hisp.)	(7) Black (Non-Hisp.)	(8) Hisp.	(9) Asian	(10) Native Amer.
J					
H					
A					
TRN					
TOT					

Trade: **IRON WORKER**

Union Affiliation, If applicable: **LOCAL 580**

Total (Col. # 1-10): **5**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): **2**

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

MALES

	(1) White (Non-Hisp.)	(2) Black (Non-Hisp.)	(3) Hisp.	(4) Asian	(5) Native Amer.
J	3		2		
H					
A					
TRN					
TOT	3		2		

FEMALES

	(6) White (Non-Hisp.)	(7) Black (Non-Hisp.)	(8) Hisp.	(9) Asian	(10) Native Amer.
J					
H					
A					
TRN					
TOT					

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

UNIONS & EXISTING WORKFORCE

NYC Small Business Services | Division of Labor Services

FORM C. CURRENT WORKFORCE
TRADE CLASSIFICATION CODES

(J) JOURNEY LEVEL WORKERS (A) APPRENTICE
(H) HELPER (TRN) TRAINEE (TOT) TOTAL BY COLUMN

FOR EACH TRADE CURRENTLY ENGAGED BY YOUR COMPANY, ENTER THE CURRENT WORKFORCE FOR MALES AND FEMALES BY TRADE CLASSIFICATION ON THE CHARTS BELOW.

Trade: **CARPENTERS**

Union Affiliation, If applicable: **LOCAL 1556**

Total (Col. # 1-10): **19**

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&10): 3

Total Female (Col. # 6-10):

MALES

	(1) White (Non-Hisp.)	(2) Black (Non-Hisp.)	(3) Hisp.	(4) Asian	(5) Native Amer.
J	8	1	10		
H					
A					
TRN					
TOT	8	1	10		

FEMALES

	(6) White (Non-Hisp.)	(7) Black (Non-Hisp.)	(8) Hisp.	(9) Asian	(10) Native Amer.
J					
H					
A					
TRN					
TOT					

Trade:

Union Affiliation, If applicable:

Total (Col. # 1-10):

Total Minority, Male & Female (Col. # 2,3,4,5,6,7,8,9&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.
J					
H					
A					
TRN					
TOT					

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

UNIONS & EXISTING WORKFORCE

RE: QUESTION #17

ADAM'S EUROPEAN CONTRACTING INC,
TIN: 11-3210275

ANSWER TO Q. 17

TRADE UNION AFFILIATIONS:

LOCAL 1: BRICKLAYERS & ALLIED CRAFTWORKERS,
POINTERS, CLEANERS & CAULKERS
PLASTERERS & CEMENT MASONS

LOCAL 8: UNITED UNION OF ROOFERS, WATERPROOFERS & ALLIED CRAFTWORKERS

LOCAL 731: COMMON LABORERS UNION

LOCAL 79: MASON TENDERS DISTRICT COUNCIL

LOCAL 14 & 15A: INTERNATIONAL UNION OF OPERATING ENGINEERS

LOCAL 28: SHEET METAL WORKERS INTERNATIONAL ASSOCIATION

LOCAL 46: METAL LATHERS

LOCAL 1556, 45, 926: CARPENTERS AND JOINERS

LOCAL 580: IRON WORKERS

LOCAL 780: CEMENT MASONS

LOCAL 1010: HIGHWAY, ROAD AND STREET CONSTRUCTION LABORERS

LOCAL 78: LABORERS-INDEPENDENT ASBESTOS

LOCAL 7: TILES, MARBLES & TERRAZZO

LOCAL 9: PAINTERS

LOCAL 138: OPERATING ENGINEERS (HEAVY AND HIGHWAY)

NYC Small Business Services | Division of Labor Services

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 $1,000,000 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
VARSITY PLUMBING AND HEATING, INC.	W	PLUMBING	PLUMBER	1,209,846.00 (yes)
SAMCO ELECTRIC CORP. (yes)	W	ELECTRIC	ELECTRICIAN	1,584,582.45 (yes)
CHAPMAN & EVANS, INC. (yes)	W (yes)	HVAC	SHEET METAL WORKERS, INSULATORS	1,082,575.50 (yes)
EAGLE MECHANICAL INC. (yes)	W	FIRE SUPPRESION	STEAMFITTER	862,500.00 (yes)

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

Ownership codes: **W**: White **A**: Asian **B**: Black **N**: Native American **H**: Hispanic **F**: Female

FOR OFFICIAL USE ONLY: File No. _____

Revised 11/09

NYC Dept. of Small Business Services, Division of Labor Services, Contract Compliance Unit, 110 William Street, NY, NY 10038
Phone: (212) 513 – 6323 Fax: (212) 618 – 8879

NYC Small Business Services | Division of Labor Services

FORM B: PROJECTED WORKFORCE

TRADE CLASSIFICATION CODES

(J) Journey level Workers
(A) Apprentice
(H) Helper
(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.*

Trade: MASON TENDER

Union Affiliation, if applicable:

LOCAL 79

Total (Col. #1-10):

10

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

5

Total Female
(Col. #6 – 10):

	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	5	2	3	1						
H										
A										
TRN										
TOT	5	2	3	1						

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

FOR OFFICIAL USE ONLY: File No. _____

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NYC Small Business Services | Division of Labor Services

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: BRICKLAYER

Union Affiliation, if applicable:

LOCAL 1

Total (Col. #1-10):

8

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

3

Total Female
(Col. #6 – 10):

	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	4	1	2							
H										
A										
TRN										
TOT	4	1	2							

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

FOR OFFICIAL USE ONLY: File No. _____

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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: OPERATING ENGINEER

Union Affiliation, if applicable:

LOCAL 14

Total (Col. #1-10):

2

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

1

Total Female
(Col. #6 – 10):

	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	1		1							
H										
A										
TRN										
TOT	1		1							

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

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NYC Small Business Services | Division of Labor Services

FORM B: PROJECTED WORKFORCE
TRADE CLASSIFICATION CODES

(J) Journey level Workers
(A) Apprentice
(H) Helper
(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.*

Trade: CEMENT MASON

Union Affiliation, if applicable: LOCAL 780

Total (Col. #1-10): 4

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

Total Female (Col. #6 – 10):

	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	1							
H										
A										
TRN										
TOT	2	1	1							

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

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NYC Small Business Services | Division of Labor Services

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: LABORER

Union Affiliation, if applicable: LOCAL 1298

Total (Col. #1-10): 4

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

Total Female (Col. #6 – 10):

	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	1							
H										
A										
TRN										
TOT	2	1	1							

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

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NYC Small Business Services | Division of Labor Services

FORM B: PROJECTED WORKFORCE
TRADE CLASSIFICATION CODES

(J) Journey level Workers
(A) Apprentice
(H) Helper
(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.*

Trade: ROOFER

Union Affiliation, if applicable: LOCAL 8

Total (Col. #1-10): 10

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

Total Female (Col. #6 – 10):

	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	6	2	2							
H										
A										
TRN										
TOT	6	2	2							

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

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Phone: (212) 513 – 6323 Fax: (212) 618 – 8879

NYC Small Business Services | Division of Labor Services

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: SHEET METAL WORKER

Union Affiliation, if applicable:
LOCAL 28

Total (Col. #1-10):
4

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

Total Female
(Col. #6 – 10):

	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	1							
H										
A										
TRN										
TOT	2	1	1							

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

FOR OFFICIAL USE ONLY: File No. _____

NYC Dept. of Small Business Services, Division of Labor Services, Contract Compliance Unit, 110 William Street, NY, NY 10038
Phone: (212) 513 – 6323 Fax: (212) 618 – 8879

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

Project Labor Agreement - - Letter of Assent

Dear:

The undersigned party confirms that it agrees to be a party to and be bound by the New York Agency, Project Labor Agreement as such Agreement may, from time to time, be amended by the parties or interpreted pursuant to its terms. The terms of the Project Labor Agreement, its Schedules; Addenda and Exhibits are hereby incorporated by reference herein.

The undersigned, as a Contractor or Subcontractor (hereinafter Contractor) on the Project known as DEP SWAFT MAINTENANCE BUILDING and located at 356 FLUSHING AVE, BROOKLYN, NY (hereinafter PROJECT), for and in consideration of the award to it of a contract to perform work on said PROJECT, and in further consideration of the mutual promises made in the Project Labor Agreement, a copy of which was received and is acknowledged, hereby:

(1) Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all schedules; amendments and supplements now existing or which are later made thereto:

(2) Agrees to be bound by the legally established collective bargaining agreements and local trust agreements as set forth in the Project Labor Agreement and this Agreement but only to the extent of Program Work and as required by the PLA.

(3) Authorizes the parties to such local trust agreements to appoint trustees and successor trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the Contractor but only to the extent of Program Work as required by the PLA.

(4) Certifies that it has no commitments or agreements that would preclude its full and complete compliance with the terms and conditions of said Agreement. The Contractor agrees to employ labor that can work in harmony with all other labor on the Project and shall require labor harmony from every lower tier subcontractor it has engaged or may engage to work on the Project. Labor harmony disputes/issues shall be subject to the Labor Management Committee provisions.

(5) Agrees to secure from any Contractor(s) (as defined in said Agreement) which is or becomes a Subcontractor (of any tier), to it, a duly executed Agreement to be Bound in from identical to this document.

Dated: 12/06/2013

ADAM'S EUROPEAN CONTRACTING INC.
(Name of Contractor or subcontractor)

ADAM'S EUROPEAN CONTRACTING INC.
(Name of CM; GC; Contractor or Higher Level Subcontractor)

MALGORZATA SKARZYNSKI - CEO
(Authorized Officer & Title)

589 JOHNSON AVE, BROOKLYN, NY 11237
(Address)

PH: (718)-417-9000 FAX: (718) 417-1093
(Phone) (Fax)

Contractor's State License # N/A

M. Skarzynska
SIGNATURE

DOMINIKA D MAJEWSKA
Notary Public - State of New York
NO. 01MA6226908
Qualified in Queens County
My Commission Expires Aug 16, 2014

Sworn to before me this 6th day of DECEMBER 2013

Dominika Majewska
Notary Public

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: COUNTY OF KINGS, New York
~~25TH OF NOVEMBER~~, 2013
6TH OF DECEMBER (DM)

M. Skarzynska
SIGNATURE

MALGORZATA SKARZYNSKI
PRINTED NAME

CEO
TITLE

Sworn to before me this
(DM) ~~25TH~~ 6TH day of ~~NOVEMBER~~ DEC. (DM) 2013

Dominika Majewska
Notary Public

Dated: ~~11/25/2013~~ (DM) 12/6/2013

DOMINIKA D MAJEWSKA
Notary Public - State of New York
NO. 01MA6226908
Qualified in Queens County
My Commission Expires Aug 16, 2014

DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

November 14, 2013

ADDENDUM No. #1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

EP6-KENT2
Rehabilitation and Upgrade of DEP Shaft Maintenance Building

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. **Revised Bid Opening Date:**
   The Bid Opening for the Contract described below scheduled for November 19th, 2013, at 2:00pm is rescheduled to November 25th, 2013, at 2:00pm.

   Contract 1 – General Construction Work.

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

3. **Revisions to the Specifications:**
   See Attachment B.

4. **Revisions to the Drawings:**
   See Attachment C.

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) 391-2200, (718) 391-1283, or by fax at (718) 391-2615.

David Resnick, R.A.
Deputy Commissioner

ADAM'S EUROPEAN CONTRACTING INC.
Name of Bidder

By: M. Skarzynska
MALGORZATA SKARZYNSKI - CEO

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

November 25, 2013

ADDENDUM No. #2

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

EP6-KENT2
Rehabilitation and Upgrade of DEP Shaft Maintenance Building

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. **Revised Bid Opening Date:**
   The Bid Opening for the Contract described below scheduled for November 25th, 2013, at 2:00pm is rescheduled to December 6th, 2013, at 2:00pm.

   Contract 1 – General Construction Work.

2. **Revisions to the Bid Booklet:**
   Delete Pages 13-3 & 13-4 and replace with pages 13-2 &13-3, included with this Addendum.

3. **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) 391-2200, (718) 391-1283, or by fax at (718) 391-2615.

David Resnick, R.A.
Deputy Commissioner

ADAMS EUROPEAN CONTRACTING INC.
Name of Bidder

By: M. Skarzynska
MALGORZATA SKARZYNSKI - CEO

NOTICE TO BIDDERS:

- **PROJECT LABOR AGREEMENT:** **This contract is subject to a Project Labor Agreement ("PLA") entered into between the City and the Building and Construction Trades Council of Greater New York ("BCTC") affiliated Local Unions. By submitting a bid, the Contractor agrees that the PLA is binding on the Contractor and all subcontractors of all tiers. The bidder to be awarded the contract will be required to execute a "Letter of Assent" prior to award.**

  The Bidder is advised to review the following: (1) Notice regarding the PLA, (2) the PLA, and (3) the Letter of Assent, all of which are set forth at the beginning of Volume 2 of the Contract Documents.

- **SINGLE CONTRACT:** **As stated above, this contract is subject to a PLA. The requirements of the Wicks Law for separate prime contractors DO NOT APPLY to any project that is covered by a PLA. Accordingly, the requirements of the Wicks Law for separate prime contractors do not apply to this Project. The Project consists of a single contract, the Contract for General Construction Work.**

  The Bidder is advised to review the Notice set forth at the beginning of Volume 2 of the Contract Documents. The Notice specifies revisions to the Contract Documents to provide that the Project consists of a single contract and to delete any and all references to separate prime contractors.

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.

BID BOOKLET
PART A

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PROJECT ID: EP6-KENT2

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

BID BOOKLET

TABLE OF CONTENTS

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 22)
- 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 16 & 17)

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 21)
- 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)
- Any Addenda issued prior to the receipt of bids

FAILURE TO SUBMIT THE EIGHT 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

Special Experience Requirements apply as indicated below.

Bidder:	**General Construction**	**___X___ YES**	**_____ NO**
Specific Areas of Work:	**General Construction**	**___X___ YES**	**_____ NO**
	Plumbing Work	**_____ YES**	**___X__ NO**
	HVAC Work	**_____ YE S**	**___X__ NO**
	Electrical Work	**_____ YE S**	**___X__ NO**
Manufacturer(s):	**General Construction**	**___X___ YES**	**_____ NO**
	Plumbing Work	**_____ YES**	**__X__ NO**
	HVAC Work	**_____ YES**	**__X__ NO**
	Electrical Work	**_____ YES**	**__X__ NO**

(A) **EXPERIENCE REQUIREMENTS FOR THE BIDDER:** The special experience requirements set forth below apply to the bidder indicated above. Compliance with such special experience requirements will be determined solely by the City prior to an award of contract. Failure to comply with the special experience requirements will result in the rejection of the bid as non-responsive.

- The bidder must, within 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 demonstrate compliance with the special experience requirements, the bidder must complete the Qualification Form included in the Bid Booklet. The City will only evaluate a project if the following criteria are met: (1) the project is described on the Qualification Form, and (2) all information on the Qualification Form is provided. The City will not evaluate any project which does not comply with the criteria set forth herein, including any project which is referred to only on the resume of an individual.

(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.

- 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. If the bidder is relying on the prior experience of a principal or employee, it must submit documentation confirming the position held by such principal or employee in the prior entity, as well as in the bidding entity.

- 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) **EXPERIENCE REQUIREMENTS FOR SPECIFIC AREAS OF WORK**: The special experience requirements set forth below apply to the contractor or subcontractor that will perform specific areas of work. Compliance with such experience requirements will be evaluated after an award of contract. Within two (2) weeks of such award, the contractor will be required to submit the qualifications of the contractor or subcontractor that will perform these specific areas of work. If the bidder intends to perform these specific areas of work with its own forces, it must demonstrate compliance with the special experience requirements. If the bidder intends to subcontract these specific areas of work, its proposed subcontractor(s) must demonstrate compliance with the special experience requirements. Once approved, no substitution will be permitted, unless the qualifications of the proposed replacement have been

approved in writing in advance by the City. The bidder is advised to carefully review these special experience requirements prior to submitting its bid, as such experience requirements will be strictly enforced.

(1) Special experience requirements apply to the contractor or subcontractor that will perform specific areas of work specified in the section(s) set forth below.

General Construction

(a) Section 02 41 00: Demolition
(b) Section 04 01 00: Masonry Restoration and Cleaning
(c) Section 05 12 00: Structural Steel
(d) Section 05 50 00: Metal Fabrications – Miscellaneous Ornamental Metals
(e) Section 05 74 11: Cast Iron Restoration
(f) Section 07 53 00: Membrane Roofing (EPDM)

(2) Special experience requirements applicable to the contractor or subcontractor that will perform specific areas of work are summarized below. Such experience requirements are set forth in full in the Addendum to the General Conditions.

- The contractor or subcontractor performing the work of this section must, within 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. In addition, for roofing work, the contractor or subcontractor must be licensed or approved by the manufacturer of the roofing system.

(3) For each project submitted to demonstrate compliance with the special experience requirements for specific areas of work, the contractor or proposed subcontractor will be required to complete the Qualification Form included in the Bid Booklet. The City will only evaluate a project if the following criteria are met: (1) the project is described on the Qualification Form, and (2) all information on the Qualification Form is provided. The City will not evaluate any project which does not comply with the criteria set forth herein, including any project which is referred to only on the resume of an individual.

(F) **EXPERIENCE REQUIREMENTS FOR MANUFACTURER(S)**: The special experience requirements set forth below apply to the manufacturer that will supply or fabricate specific material or equipment. Compliance with such experience requirements will be evaluated after an award of contract. Within two (2) weeks of award, the contractor will be required to submit the qualifications of the proposed manufacturer(s). Once approved, no substitution will be permitted, unless the qualifications of the proposed replacement have been approved in writing in advance by the City.

(1) Special experience requirements apply to the manufacturer(s) of material and/or equipment specified in the section(s) set forth below.

General Construction

(a) Section 05 12 00: Structural Steel
(b) Section 05 74 11: Cast Iron Restoration
(c) Section 05 50 00: Metal Fabrications – Miscellaneous Ornamental Metals
(d) Section 14 42 00: Wheelchair Lift

(2) Special experience requirements applicable to the manufacturer(s) of specified material or equipment are summarized below. Such experience requirements are set forth in full in the Addendum to the General Conditions.

- The manufacturer providing the material or equipment specified in this section must, for the past five (5) years, have been regularly engaged in the manufacture of material or equipment similar in type to that required for this Project. Such similar material or equipment provided by the manufacturer must have been in satisfactory service for not less than five (5) years.

Qualification Form

Project ID: EP6-KENT2

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 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;
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#: **85014B0027**

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 #	**85014B0027**	**FMS Project ID#:**	**EP6-KENT2**
Project Title/Agency	Rehabilitation and Upgrade of DEP Shaft Maintenance Building		
PIN #	**8502014CR0001C**		
Bid/Proposal Response Date:	TUESDAY, NOVEMBER 19, 2013		
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)*

The Project Is a Code Renovation, Including Masonry Facade Rehabilitation, Cast-Iron Rehabilitation, Improvements To Accessibility, Life Safety, Egress And New Building Systems Including Mechanical And Fire Protection.

M/WBE Participation Goals for Services

Enter the percentage amount for each group or for an unspecified goal.

Prime Contract Industry: **Construction**

Group	Percentage		
Unspecified	**20**	%	
or			
Black American	**Unspecified**	%	
Hispanic American	**Unspecified**	%	
Asian American	**Unspecified**	%	
Women	**Unspecified**	%	
Total Participation Goals	**20**	%	**Line 1**

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Tax ID #: _____ APT E-

PIN#: 85014B0027

SCHEDULE B - Part II: M/WBE Participation Plan

Part I 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

☐ **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

☐ **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

Tax ID #: _____ APT E- PIN#: 85014B0027

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? % ____

✓ **Scopes of Subcontract Work**

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. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____

Section V: Vendor Certification and Required Affirmations

I hereby:

1) acknowedge 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 Yo9rk (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 maerial 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 modfied 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 _____

Print Name _____ 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** ______________

APT E-PIN # (for this procurement): ______________________ **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 <u>in good faith</u> 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 3 most recent contracts performed for NYC agencies (if any). Include information for each subcontract awarded in performance of such contracts. 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** _____

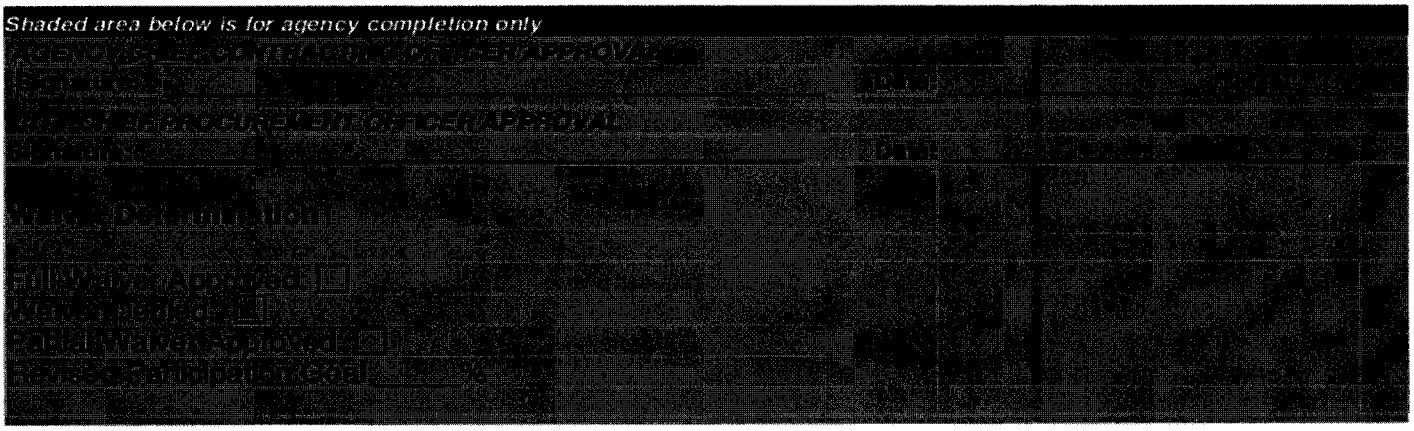
_____

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:** _____

Shaded area below is for agency completion only



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: EP6-KENT2

Rehabilitation and Upgrade of DEP Shaft Maintenance Building
356 Flushing Avenue
Brooklyn 11215

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 is 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:

10. M/WBE UTILIZATION PLAN: By signing its bid, the bidder agrees to the Vendor Certification and Required Affirmations set forth below, unless a full waiver of the Participation Goals is granted. The Vendor Certification and Required Affirmations will be deemed to satisfy the requirement to complete Section V of Part II of Schedule B: M/WBE Utilization Plan.

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.

Unit Price Schedule

Unit Price items: The items of work set forth in the Schedule below shall be performed by the contractor on a unit price basis for additional work. Such items of work shall be performed by the contractor only as directed in writing by the Commissioner.

The unit price for the items of work in the Schedule below are for EXTRA WORK ONLY i.e., work which is above and beyond that described in the Drawings and Specifications.

The bidder shall submit prices for all the items of work in the Schedule below. The bidder shall insert the total sum for all unit price items on the Bid Form, Item C - Allowance for Unit Prices. The unit price bid for each item shall include all costs and expense for the item, i.e., labor, material, overhead and profit. Quantities shown are approximate and for bid comparison purposes only. Actual amounts to be determined when the work is performed.

CSI #	Item #	Item Description	Quant.	Units	Unit Price	Total
03 41 13	1	Allow for 5% of the gross pitched roof area originally containing skylights and ventilators. Remove and replace infill with concrete on metal deck. See S-240 for skylight infill locations.	60	SF		
04 01 00	2	Perform Injection Grouting As Specified	500	SF		
04 01 00	3	Perform Brick Stitching - 4 Courses Wide (Excluding Note 12)	100	LF		
04 01 00	4	Remove And Rebuild Exterior Wythe Of Brick	600	SF		
04 01 00	5	Remove And Rebuild Individual Wythes Of Brick Backup - Assume 2 Wythes Thick	500	SF		
04 01 00	6	Rebuild Masonry Backup/Parging Where Corrugated Metal Panels Are Removed	1500	SF		
04 01 00	7	Stabilize Of Existing Brick After Removal Of Parge Coat	300	SF		
04 01 00	8	Remove And Replace Individual Brick.	200	PCS		
04 01 00		In Addition To The Area Shown On The East Elevation Drawing, And For The Purpose Of The Bid, Showing The Area Of The Brick Flat Arch To Be Injection Grouted, Allow The Following				
04 01 00	9	Remove and Rebuild 24 inch by 24 inch Section of Masonry Arch as shown on the drawings	12	EA		
04 01 00	10	Remove and Rebuild 72 inch by 24 inch Section of Masonry Arch as shown on the drawings.	6	EA		
04 40 00	11	Provide Injection Grouting Of Window Sills	10	EA		
04 40 00	12	Perform Repair Of Granite Lintels By Injection And Pins/Anchors	4	EA		

04 40 00		Allow For The Replacement Of Granite Lintels - Complete Including Brick, Steel, Flashings And Granite.				
04 40 00	13	3 Window Opening	1	EA		
04 40 00	14	2 Window Opening	1	EA		
04 40 00	15	1 Window Opening	1	EA		
05 12 00	16	Allow For Additional Connection Repairs Over And Above The 20% Required at Column Bases. See 2-S-400 for detail	25	EA		
05 12 00	17	Allow For Wide Flange Reinforcement Plates And Shapes	100	EA		
05 12 00	18	Provide Miscellaneous Structural Shapes - Channels, Angles And Plates Used For Reinforcing, Fabricated, Delivered And Placed On Scaffold For Use In The Different Areas Requiring Reinforcing.	10	TON		
05 12 00	19	Allow For Weldability Testing of Each Unique Steel Section Requiring Repairs That Is Uncovered During The Course Of The Work.	50	EA		
05 12 00	20	Allow For Fillet Welds Testing- 20% Required As Part Of Base Bid	50	EA		
05 12 00		Lattice Column Repairs - Including Brick Removal And Replacement				
05 12 00	21	Perform Web Reinforcement W/Steel Plates - Additional Height For Repairs	50	LF		
05 12 00	22	Remove And Replace Lattice W/Steel Flange Plates - Additional Height For Repairs Outside Face	50	LF		
05 12 00	23	Remove And Replace Lattice W/Steel Flange Plates - Additional Height For Repairs Inside Face See Drawing S400 For Schedule For Estimated Lattice Column Repairs.	50	LF		
05 12 00		Column Bases See Schedule On S400				
05 12 00	24	Perform Web Reinforcement	12	EA		
05 12 00	25	Perform Flange Plate Reinforcing	12	EA		
05 12 00	26	Provide New Anchor Bolts (2x Quantity Of Columns)	100	EA		
05 12 00		Built-Up Girders See Schedule On S400				
05 12 00	27	Provide Flange Replacement – Top Plate/Plates Including Replacement of all Rivets Where Flanges Replaced	17	LF / Girder		
05 12 00	28	Perform Flange Replacement – Bottom Plate/Plates Including Replacement of all Rivets Where Flanges Replace	12	LF / Girder		

05 12 00	29	Provide Web Reinforcing + Stiffener Angles X2 (Each Side Plus Bolts)Installed	12	LF / Girder		
05 12 00	30	Provide Top Or Bottom Angles That Make Up Flange – 300lf X 2- (Each Side)	17	LF / Girder		
05 12 00	31	Provide Miscellaneous Rivets	2000	EA		
05 12 00	32	Provide Filler Beams As Shown on the Schedule On S400	40	EA		
05 74 00	33	Cast Iron Spandrel Panel Cap	2	EA		
05 74 00	34	Cast Iron Spandrel Panel - Repair	4	EA		
05 74 00	35	Cast Iron Spandrel Panel - Replace	6	EA		
05 74 00	36	Cast Iron Spandrel Panel Base	4	EA		
05 74 00	37	Cast Iron Right Side Column, Upper Section	4	EA		
05 74 00	38	Cast Iron Left Side Column, Upper Section	4	EA		
05 74 00	39	Cast Iron Center Column, Upper Section	4	EA		
05 74 00	40	Cast Iron Center Column, Lower Section	4	EA		
05 74 00	41	Cast Iron Right Side Column, Lower Section	4	EA		
05 74 00	42	Cast Iron Left Side Column, Lower Section	4	EA		
05 74 00	43	Cast Iron Header Above Lower Window	2	EA		
06 00 00	44	Perform Pull Out Tests On Existing Sleepers	20	EA		
06 00 00	45	Remove And Replace Deteriorated Sleepers On Sloped Roof Made Visible After Removal Of Plywood Sheathing And Shingle Roofing Under Terms And Conditions Of The Base Bid	3400	LF		

Total Amount of Unit Price Work _____*

* Insert Total amount of Unit Price Work on line C of Bid Form

Note: All quantities are approximate

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BID FORM

PROJECT ID: EP6-KENT2

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 items (B) and (C) 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 Material Sold and Delivered		Total Price For Labor		
$_____	+	$_____	Total Price for Item A=	$_____

B. ALLOWANCE for Incidental Asbestos Abatement (Section 028013 of the Specifications) **$30,000.00**

C. AMOUNT for Unit Prices (from pages 13-0, 13-1, & 13-2) for extra work items _____

TOTAL BID PRICE (Add A + B + C) (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 17) 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: Secretary of Corporate Bidder
(Corporate Seal)

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 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.

The list of subcontractors is to be submitted in a separate sealed envelope by completing the form on the next page entitled "Bidder's Identification of Subcontractors". This form provides for the identification of 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 so indicate on the form.

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 Section 6-129 of the Administrative Code of the City of New York, 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 Participation Goals identified in the M/WBE Utilization Plan, the bid will be non-responsive unless the bidder requests and obtains a full or partial waiver of the Participation Goals (M/WBE Utilization Plan, Part III) in advance of bid submission. For more information see Notice to All Prospective Contractors, Participation by Minority-Owned and Women-Owned Business Enterprises in City Procurement.

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.

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: EP6-KENT2

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:**

_____
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ _____

2. **HVAC CONTRACTOR:**

_____
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ _____

3. **ELECTRICAL CONTRACTOR:**

_____
(Print Name)

Agreed Amount To Be Paid To Subcontractor: $ _____

BIDDER'S SIGNATURE: The Bidder must sign this form in the space provided below:

Name of Bidder: _____

By: _____
Signature of Partner or Corporate Officer

Print Name: _____

Title: _____

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 fulfullment 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) _____ (L.S.)
Principal

By: _____

(Seal) _____
Surety

By: _____

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.

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder:

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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							
015423	**Scaffolding/ Staging**							
	Scaffolding		SF					
	Sidewalk Bridging		LS					
	Subtotal							
015719	**Environmental Protection During Construction (Included w/ General Conditions)**							
017329	**Cutting and Patching (Included w/ General Conditions)**							
017419	**Construction Waste Management (Included w/ General Conditions)**							
Division 2	**Existing Conditions**							
024100	**Demolition**							
	Interior Demolition:							
	Remove Existing Masonry Infill @ Window Openings		SF					
	Remove Ventilation Fans @ Window Openings		EA					
	Demo Partitions		SF					
	Remove Doors & Frames		EA					
	Demo Lower Portion Of Column Casing & Slab To Expose Structural Steel Base		EA					
	Remove Existing Reinforced Concrete Slab		SF					
	Remove Existing Finished Flooring, Prepare for Paint		SF					
	Remove Existing Finished Flooring		SF					
	Remove Plumbing Fixtures & Cap		EA					
	Salvage Removed Lavs For Reinstallation		EA					
	Remove Toilet Rm. Finishes		SF					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder:

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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
	Remove Concrete Curb, Steps/Stair & Landings		SF					
	Remove Window & Masonry Wall Below For New Door Opening		EA					
	Remove Metal Stair & Doors @ Rm. 110		LS					
	Vertical Duct Slab Penetrations		EA					
	Chop Concrete Slab @ Stair D		SF					
	Remove Stair & Metal Ramp		EA					
	Remove Self Contained Office Cubicles		EA					
	Prepare Floor For Ceramic Tile		SF					
	Remove Radiator In Map room & Cap		LF					
	Remove Door & Patch Masonry Opening		EA					
	Remove Mezzanine & Related Lighting		SF					
	Drain & Clean Abandoned Pit of Debris		LS					
	Remove Concrete Encasement On Girders		CY					
	Remove Portions Of Masonry Shaft Wall In Cellar For Mep's		LOC					
	Remove Shoring		LS					
	Misc. Demolition							
	Remove Existing Skylight Infill		SF					
	Remove Exterior Sign		EA					
	Remove Exterior CMU Wall For New Louver		SF					
	Subtotal							
028213	**Asbestos Abatement**							
	Asbestos Abatement		LS					
	Subtotal							
Division 3	**Concrete**							
033000	**Cast-In-Place Concrete**							
	Infill Abandoned Pit W/ Concrete							
	- W/ Concrete		CY					
	- W/ Polystyrene		CY					
	Scar Patch Floor On 3rd Floor @ Removed Caged Partition		SF					
	LW Concrete Slab (On Metal Roof Deck)		SF					

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Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building

Location: 356 Flushing Avenue, Brooklyn NY 11205

Bidder: _____

DDC ID: EP6-KENT2

Sponsor Agency: DEP

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 1/4" Concrete On Metal Deck @ New Slab & Ramp		SF					
	Patch Concrete Slab & Column Bases		EA					
	Concrete Ramp To Main Office		SF					
	Slab Depression (Included above)							
	Concrete On Metal Deck @ Removed Skylight Infill		SF					
	9" Thick Concrete Curb @ Ramp		CY					
	Spall Repair On Concrete Roof Slabs (5% OF Courtyard Roof)		SF					
	Subtotal							
034113	**Precast Concrete Plank**							
	Replace Concrete Plank In Kind @ Infilled Skylights (5%)		SF					
	Subtotal							
Division 4	**Masonry**							
040100	**Masonry Restoration and Cleaning**							
	Remove Bulkhead Parapet Wall		SF					
	Remove Extraneous Metal Attachments		EA					
	Masonry Cleaning (100% Of Existing Masonry Façade)		SF					
	Repoint Stone Masonry (100% Of Existing)		SF					
	Repoint Brick Masonry (100% Of Existing)		SF					
	Brick Replacement Per Drawings		SF					
	Brick Replacement Allowance Per General Scope		SF					
	Brick Stabilization @ Corrugated Metal Panels Allowance Per Drawings		SF					
	Honing Of Spalled Face Brick Allow Per Drawings		EA					
	Grout Inject Granite Sills Allow Per Drawings		LOC					
	Stitch Repair Large Vertical Crack Full Height Of South Wall Along Column Line G		LF					
	Injection Grout Allowance Per Drawings		SF					
	Repair & Replace Masonry Corners		EA					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder:

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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
	Grout Inject Jack Lintels		EA					
	Masonry Parapet @ Bulkhead		SF					
	Scaffolding (Included w/ 015423)							
	Sidewalk Bridging (Included w/ 015423)							
	Subtotal							
040503	**Mortars (Included w/ 042000)**							
042000	**Unit Masonry**							
	6" CMU Partitions		SF					
	Infill Window Openings W/ CMU & Cementitious WP		SF					
	Infill Interior Door Openings		SF					
	Remove & Replace Masonry Column Enclosures @ Lattice Columns		CF					
	Work @ Existing Brick Shaft Wall For New Ramp Structural Steel							
	Remove Portion Of Existing Brick Shaft Wall		SF					
	Provide 3 Wythe Brick Infill After Steel Is Installed		SF					
	Mortar Fire Proofing		SF					
	Provide Shoring		LF					
	Subtotal							
044000	**Stone Work**							
	Granite Sill Repair In Place (20% Of Total Sills)		LF					
	Removal & Replacement Of Granite Lintels:							
	Temporary Support Masonry Above Lintels		LF					
	Remove & Reinstall Stone Masonry		SF					
	Remove & Replace Brick Masonry		SF					
	Remove & Replace Granite Lintels		LF					
	Remove Embedded Steel @ Removed Brick Masonry		LF					
	Evaluate Lintels For Cracks W/ Non Destructive Testing Company		LS					
	Remove, & Replace Chimney Caps		EA					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: _____

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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 5	**Metals**							
051200	**Structural Steel**							
	Remove Bulkhead Roof Structure		SF					
	Lattice Column Repair:							
	Temporary Shoring & Bracing Of Columns		EA					
	Remove & Replace Lattice Diagonal Bracing (Allow 50%)		LF					
	Scrape & Paint Exposed Columns		LF					
	Column Base Repair:							
	Welded Repair For Column Bases (Allow 20 EA)		EA					
	Scrape & Paint Exposed Column Bases		EA					
	Machine Room Girder Repair:							
	Removal & Replacement Of Bottom Flanges (Allow 300 LF Of (2) 6" x 6" x 1/2 L)		LF					
	Removal & Replacement Of Web (Allow 120 LF Of 4'-0" x 1/2" Plate)		LF					
	Removal & Replacement Of Moment Plate (Allow 100 LF Of 1'-3" x 3/4" Plate)		LF					
	Removal & Replacement Of Rivets To Bolts (Allow 2000 EA)		EA					
	Garage Floor Girder Repair:							
	Removal & Replacement Of Top Flanges (Allow 30% Of (2) 6" x 6" x 7/8 L)		LF					
	Removal & Replacement Of Web (Allow 20% Of 4'-0" x 1/2" Plate)		LF					
	Removal & Replacement Of Top Plate (Allow 240 LF Of 1'-4" x 1/2" Plate)		LF					
	Removal & Replacement Of Rivets (Allow 6000 EA)		EA					
	Bottom Flange Replacement (Allow 20% Per Drawings)		LF					
	Filler Beam Replacement (Allow 30% Per Drawings)		LF					
	Scrape & Paint Exposed Girders		SF					
	Remove & Replace Existing Lintels @ Cellar		LF					
	Visually Inspect Lintels		EA					
	Expose Lintels For Inspection & Patch Masonry		EA					
	Replace Lintels Allow Per Drawings		EA					
	Remove Beam Above Garage Doors		EA					

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	New Beam Above Garage Doors		LBS					
	Structural Steel @ Bulkhead		LBS					
	Structural Steel Angles @ Skylight Infill		LBS					
	Structural Steel @ New Ramp		LBS					
	Subtotal							
053000	**Metal Decking**							
	Metal Deck @ BH Roof		SF					
	Metal Deck @ Skylight Infill		SF					
	Metal Deck @ Ramp @ New Slab		SF					
	Subtotal							
054000	**Cold Formed Metal Framing**							
	2 X 10 Metal Joist Floor Framing @ Room 110		SF					
	Subtotal							
055000	**Metal Fabrications - Miscellaneous/ Ornamental Metals**							
	Provide Metal Non-Slip Nosings On Existing Stairs		LF					
	Remove & Replace Railing System @ Existing Stairs		LF					
	Caged Ladder @ BH		EA					
	Channel & Angle Door Frames @ Overhead Doors		LF					
	Stairs D:							
	Stair Treads & Risers		RFT					
	Landings		SF					
	Guardrailing		LF					
	Wall Railing		LF					
	Stairs E & F:							
	Stair Treads & Risers		RFT					
	Landings		SF					

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	Guardrailing		LF					
	Stairs G:							
	Stair Treads & Risers		RFT					
	Ramp & Landings		SF					
	Guardrailing		LF					
	Provide Trench Drain Forms & Boxes Including Concrete Cutting & Patching		LF					
	Provide Pipe Railing @ Rm 113		LF					
	Cage Door To Access Underside Of Stair		EA					
	Cage & Door To Deter Egress Travel W/ Panic HW		EA					
	New Mtl Plate @ Chair Lift Threshold Checkered Plate Steel		LF					
	6" Painted Steel Metal Pipe Bollards		EA					
	Pipe Railing @ Ramp In Room 101		LF					
	Subtotal							
057411	**Cast Iron Restoration**							
	Remove Cast Iron Panels & Columns @ Courtyard Bays		EA					
	Remove Cast Iron Elements from Masonry Openings & Ship to Remote Restoration Shop		LOC					
	Cast Iron Restoration							
	Panels		SF					
	Columns		LF					
	Casting Replacements							
	Spandrel Panels (15% Of Total)		SF					
	Spandrel Panel Cap		LF					
	Spandrel Panel Base		LF					
	Columns		LF					
	Header Above Lower Window		LF					
	Repair/Rebuilding Of Spandrel Panels (10% Of Total)		SF					
	Remove Parge Coat From Behind Spandrel Panels & Sound Existing Parge Coat		SF					
	Remove Masonry From Behind Spandrel Panels		SF					
	Replace Masonry Behind Spandrel Panels		SF					

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	Replace Parge Coat		SF					
	Temporary Protection		SF					
	Subtotal							
Division 6	**Wood, Plastics, and Composites**							
060000	**Carpentry (Rough and Finish Carpentry)**							
	Temporary Partitions (5000 SF)		SF					
	PT Roof Blocking @ BH Roof		LF					
	(2) 3/4" Plywood Subfloor @ Room 110		SF					
	Remove & Replace Existing Roof Sleepers		LF					
	Provide Pull Test To Determine Capacity Of Existing Concrete Deck		EA					
	L.G Mtl Framing W/ 1 Layer Of 3/4" Plywood On Each Side & Insulation @ Garage Door		SF					
	Misc. Rough Blocking		LS					
	Subtotal							
Division 7	**Thermal and Moisture Protection**							
072200	**Roof Insulation - Nail Base Type**							
	Tapered Insulation @ Courtyard & BH Roof (Included w/ 075300)							
	Composite Nail Base Insulation @ Pitched Roof		SF					
	Subtotal							
075300	**Membrane Roofing (EPDM)**							
	Remove Existing Membrane Roofing							
	Bulkhead		SF					
	Second Floor Courtyard		SF					
	Temp. Roof Weather Protection		SF					
	EPDM Roof Systems							
	Bulkhead		SF					
	Gravel Stop @ Bulkhead Roof		SF					
	Second Floor Courtyard		SF					
	Subtotal							

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076000	**Flashing and Sheet Metal**							
	Remove & Replace Copper Cap Flashing W/ Aluminum Coping		LF					
	Remove & Replace Copper Flashing On 3rd Floor Courtyard Sills		LF					
	Provide Roof Drain Flashing Pans & Roof Scuppers		EA					
	New Break Form Sill Flashing @ Second Floor Windows		LF					
	Cap Flashing		LF					
	Subtotal							
076110	**Metal Roofing**							
	Remove Asphalt Shingle Roofing, Flashing, Sheathing & Framing		SF					
	Remove Flashings, Gutters, Roof Leaders & Roof Drain Caps		LF					
	Remove Concrete Fill @ Gutter		LF					
	Temp. Roof Weather Protection		SF					
	Provide Standing Seam Metal Roof System		SF					
	EPDM Membrane Under Roof 12' Above End Of Metal Roof		SF					
	Lined Gutter:							
	EPDM Membrane (Over Parapet)		SF					
	Rigid Tapered Insulation		SF					
	Metal Gutter @ Courtyard Side Of Roof		LF					
	Metal Leader		LF					
	Subtotal							
078100	**Fireproofing**							
	Spray On Fireproofing @ 1st Floor Girders		SF					
	Spray On Fireproofing @ New BH Structure		SF					
	Subtotal							
078400	**Firestopping**							
	Firestopping		LS					
	Subtotal							

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079000	**Caulking & Sealing/ Joint Sealants**							
	Provide Caulking & Sealants:							
	Brick To Stone (Included w/ repointing)							
	Masonry To Cast Iron		LF					
	Windows & Doors		LF					
	Paving To Building		LF					
	Misc. Interior Sealants		LS					
	Subtotal							
Division 8	**Openings**							
081100	**Metal Doors and Frames**							
	HM Doors, Frames & Hardware							
	3'-0" x 7'-0"		EA					
	6'-0" x 7'-0"		PAIRS					
	8'-0" X 7'-0"		Pair					
	Doors In Existing Frames		EA					
	Secure Existing Door In Locked Position @ Office 113		EA					
	Provide New Panic Hardware On Existing Doors		EA					
	Remove & Replace Lever HW @ Existing Doors		EA					
	Subtotal							
083100	**Access Doors**							
	3'-0" X 4'-0" Access Doors		EA					
	Subtotal							
083330	**Coiling Doors and Grilles**							
	Remove & Replace OH Door & Gates		EA					
	Subtotal							

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085110	**Aluminum Windows**							
	Remove Alum. Windows & Prepare Opening For New Windows/Louver		EA					
	Provide New Aluminum Windows, Aprox. 8'-6" x 8'-6" W/ 8 SF Louver		EA					
	Subtotal							
085630	**Storm Windows**							
	Provide Interior Storm Windows, Appox size 8'-6" X 8'-6"		EA					
	Subtotal							
086300	**Skylights, Metal Framed & Custom**							
	Remove & Replace Skylight On Existing Curb		SF					
	Repair Smaller Skylights @ Lower Roof		EA					
	Subtotal							
088000	**Glass and Glazing (Included w/ 085110 & 085630)**							
089000	**Louvers and Vents**							
	Louvers @ Cellar		SF					
	Louver @ 1st Floor		SF					
	Subtotal							
Division 9	**Finishes**							
092400	**Portland Cement Plaster (Stucco)**							
	Remove Corrugated Metal Wall Panels		SF					
	Stucco		SF					
	Subtotal							
092900	**Gypsum Drywall**							
	Gypsum Board Partitions (Taped & Spackled)							
	Type 4, Z Channel @ 24" O/C, 1 1/2" Rigid Insul. & 1 Layer 5/8" GWB One Side		SF					

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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
	Type 5 & 6, 2 1/2" Metal Studs @ 16" O/C & 1 Layer 5/8" GWB One Side		SF					
	Type 7, (2) 3 5/8" Metal Studs @ 16" O/C & 1 Layer 5/8" GWB Each Side		SF					
	GWB Fascia & Soffit @ Rm. 210		SF					
	2 Hr Rated Suspended Ceilings @ Stairs		SF					
	Subtotal							
093000	**Tile Work**							
	Ceramic Tile Flooring							
	Rm. 108		SF					
	Rm. 116		SF					
	Rm. 210		SF					
	Ceramic Tile Base		LF					
	Ceramic Tile Wainscott		SF					
	Subtotal							
095100	**Acoustical Treatment**							
	ACT Ceilings:							
	2' X 2'		SF					
	2' X 4'		SF					
	Subtotal							
096500	**Resilient Flooring**							
	VCT Flooring @ Rm. 110 & Main Office		SF					
	Vinyl Base							
	Rm. 110 & Main Office		LF					
	Rm. 204		LF					
	Subtotal							

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096700	**Special Flooring**							
	Fluid Applied Traffic Coating		SF					
	Subtotal							
099000	**Painting**							
	Paint New Masonry Walls, Incl. Column Encasement		SF					
	Water Resistant Wall Coatings		SF					
	Provide Vapor Coating @ Inside Of Exterior Wall @ Rm 204		SF					
	Paint GWB Walls & Ceilings		SF					
	Field Finish Existing Stairs		RFT					
	Field Finish All New Doors & Frames		LVS					
	Patch & Paint Plaster Walls @ Rm. 110		SF					
	Scar Patch Walls @ Removed Partitions		SF					
	Patch / Repair Wall & Door Opening @ Roof Access 401		LOC					
	Misc. Finishes & Restoration		LS					
	Pavement Markings		LS					
	Subtotal							
Division 10	**Specialties**							
102100	**Toilet & Shower Compartments**							
	Toilet Partitions							
	Standard		EA					
	Handicap		EA					
	Grab Bars		EA					
	Prefabricated Shower Compartments		EA					
	Subtotal							
102213	**Wire Mesh Partitions**							
	Wire Mesh Partitions on 3rd Floor		SF					
	Gates in Wire Mesh Partition		EA					
	Subtotal							

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102800	**Toilet Accessories**							
	Mirror							
	5'-0" X 3'-6"		EA					
	2'-0" X 3'-6"		EA					
	Paper Towel Dispenser / Disposal		EA					
	Toilet Paper Dispenser		EA					
	Subtotal							
105100	**Lockers and Benches**							
	Lockers		EA					
	Benches		EA					
	Subtotal							
109000	**Miscellaneous Specialties**							
	Signage @ Front Elevation Of Building (NYC Enviromental Protection)		LS					
	Subtotal							
Division 14	**Conveying Systems**							
140000	**Wheelchair Lift**							
	Platform Chair Lift		LS					
	Subtotal							
Division 21	**Fire Suppression**							
211200	**Fire Suppression Standpipe System (Existing System)**							
211300	**Fire Suppression**							
	6" Blk Stl Pipe Stan Wt Grooved		LF					
	5" Blk Stl Pipe Stan Wt Grooved		LF					
	4" Blk Stl Pipe Sch 40 Grooved		LF					
	3" Blk Stl Pipe Sch 40 Grooved		LF					

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	2 1/2" Blk Stl Pipe Sch 40 Grooved		LF					
	2" Blk Stl Pipe Sch 40 T&C		LF					
	2 1/2 " Galvanized Stl Pipe Sch 40 Grooved		LF					
	Grooved Fittings		EA					
	125# Cast Iron Fittings		EA					
	Galvanized Grooved Fittings		EA					
	Hangers		EA					
	125# Cast Iron Gate Valves		EA					
	125# Cast Iron Alarm Check Valve		EA					
	12# Cast Iron Check Valves		EA					
	Autamitic Ball Drips		EA					
	Siamese Fire Department Connections		EA					
	Floor Control Valve Assemblies		EA					
	Double Inrterlock Preaction Valves w/ Air Compressor, Panel		EA					
	Dry Valves w/ Compressor, Air Maintenance Device		EA					
	Floor Sleeves		EA					
	Fire Pump, 1,000 GPM w/ Jockey Pump, Control Panel		EA					
	165 Degree Upright Heads w/ Branch Piping		EA					
	165 Degree Concealed Heads w/ Branch Piping		EA					
	165 Degree Pendant Heads w/ Branch Piping		EA					
	165 Degree Upright Heads w/ Galvanized Branch Piping		EA					
	Tamper Switches		EA					
	Flow Switches		EA					
	Spare Head Cabinets		EA					
	Hydraulic Calculation, Coordination Drawings		LS					
	Drain, Fill and Vent		MH					
	Subtotal							
Division 22	**Plumbing**							
220500	**Common Work Results for Plumbing**							
	Floor Sleeves		EA					
	Exterior Wall Sleeves		EA					

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	Dielectric Fittings		EA					
	Escutcheons		EA					
	Excavation, Bedding, and Backfill		LF					
	Concrete Cutting and Rough Patching		LF					
	Large Bore Pipe Demolition/ Underground		LF					
	Medium Bore Pipe Demolition		LF					
	Floor Drain Demolition		EA					
	Support Storm Leaders During Slab Removal		LOC					
	Subtotal							
220513	**Electric Motors and Motor Controllers (Included w/ 223000)**							
220523	**General-Duty Valves for Plumbing Piping**							
	Curb Stop w/ Box		EA					
	125# Cast Iron Gate Valves		EA					
	150# Bronze Ball Valves		EA					
	125# Cast Iron Check Valves		EA					
	125# Cast Iron Lubricated Plug Cocks		EA					
	Subtotal							
220529	**Hangers & Supports**							
	Pipe Hangers		EA					
	Steel Pipe Stabilizers		EA					
	Subtotal							
220553	**Identification and Painting for Plumbing Piping and Equipment**							
	Valve Tags, Pipe Identification		LS					
	Subtotal							
220577	**Plumbing System Tests**							
	System Testing		MH					
	Subtotal							

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220700	**Plumbing Insulation**							
	Fiberglass Pipe Insulation		LF					
	Hydropneumatic Tank Insulation		LS					
	Water Meter Insulation		LS					
	Subtotal							
221000	**Pipe, Tube, and Fittings (included w/ 221100)**							
221100	**Facility Water Distribution**							
	8" Ductile Iron Pipe		FT					
	Mechanical Joint Fittings		EA					
	Thrust Block		EA					
	6" Blk Stl Pipe Stan Wt Grooved		FT					
	4" L Copper Tubing		FT					
	3" L Copper Tubing		FT					
	2" L Copper Tubing		FT					
	2 1/2" L Copper Tubing		FT					
	1 1/2 In Dia L Copper Tubing		FT					
	1 1/4 In Dia L Copper Tubing		FT					
	1 In Dia L Copper Tubing		FT					
	3/4 In Dia L Copper Tubing		FT					
	1/2 In Dia L Copper Tubing		FT					
	Grooved Fittings		EA					
	Wrought Copper Fittings		EA					
	Connections to Existing		EA					
	Double Check Detector Assembly		EA					
	125# Cast Iron Reduced Pressure Zone Backflow Preventor		EA					
	150# Bronze Reduced Pressure Zone Backlfow Preventor		EA					
	150# Bronze Double Check Backflow Preventor		EA					
	Water Meter		EA					
	Thermostatic Mixing Valves		EA					
	Braided Stainless Flexible Connection		EA					

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	Hydropneumatic Tank		EA					
	Electric Water Heater 6 Gallon, 1.5 KW ASME Rated		EA					
	Electric Water Heater 120 Gallon, 24 KW, ASME Rated		EA					
	Flushing and Disinfection		LS					
	Solder, Flux, Gas, Etc		LS					
	Temporary Piping							
	- 1/2 In Dia L Copper Tubing		FT					
	- 3/4 In Dia L Copper Tubing		FT					
	- 2 In Dia L Copper Tubing		FT					
	- Wrought Copper Fittings		EA					
	- Pipe Hangers		EA					
	- Connections to Existing		EA					
	Subtotal							
221300	**Facility Sanitary Sewerage**							
	6" XH Cast Iron Pipe		LF					
	4" XH Cast Iron Pipe		LF					
	XH Cast Iron Fittings		EA					
	Cleanout Deckplates		EA					
	4" No Hub Cast Iron Pipe		LF					
	3" No Hub Cast Iron Pipe		LF					
	2" No Hub Cast Iron Pipe		LF					
	1 1/2" No Hub Cast Iron Pipe		LF					
	4" Galvanized Stl Pipe Sch 40 T&C		LF					
	No Hub Cast Iron Fittings		EA					
	150# Galvanized Maleable Fittings		EA					
	House Traps		EA					
	FD B Floor Drains		EA					
	FD C Floor Drains		EA					
	Roof Drain		EA					
	Overlfow Drain		EA					
	2" Funnel		EA					
	12" Wide by 14 Foot Heavy Duty Trench Drain		EA					

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	Connections to Existing		EA					
	Gaskets, No Hub Couplings, Lubricants, Etc.		LS					
	Facility Fuel System							
	6" Blk Stl Pipe Stan Wt PE		FT					
	4" Blk Stl Pipe Sch 40 PE		FT					
	3" Blk Stl Pipe Sch 40 PE		FT					
	2" Blk Stl Pipe Sch 40 PE		FT					
	2" Millwrapped Blk Stl Pipe Sch 40 PE		FT					
	150# Buttweld Fittings		EA					
	Gas Meter		EA					
	Pressure Regulator		EA					
	Rod, Gas, Lubricants, Etc.		LS					
	Subtotal							
223000	**Plumbing Equipment, Specialties, & Accessories**							
	Duplex Domestic Water Pressure Booster Pump 70 GPM @ 139Ft, 7.5 HP w/158 Gallon Cushion Tank		EA					
	SP 1,2 Duplex Sump Pump 100 GPM @ 30 Ft, 3/8 HP		LS					
	Duplex Sewage Ejectors 50 GPM 2 HP w/ Basin, Control Panels		EA					
	High Pressure Hosebibb		EA					
	Oil Interceptor w/ Sand Trap		EA					
	50 Foot Hose Reel		EA					
	Truck Wash System		EA					
	Fire Protection Floor Control Access Ladders		EA					
	Vibration Isolation (Booster Pump)		LS					
	Subtotal							
224000	**Plumbing Fixtures**							
	Service Sinks		EA					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: _____

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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
	Wall Mounted Water Closet w/ Carrier		EA					
	Wall Mounted Lavatories w/ Carrier		EA					
	Shower Bases, Diverters		EA					
	Subtotal							
Division 23	**Heating, Ventilating, and Air Conditioning**							
230500	**Common Work Results for HVAC**							
	Temporary Heat		LS					
	Valve Tags, Pipe/ Duct Identification		LS					
	Subtotal							
230513	**Common Motor Requirements for HVAC Equipment (Included w/ 236450)**							
230548	**Vibration and Seismic Controls for HVAC Piping and Equipment**							
	Seismic Restraint, Certification		LS					
	Subtotal							
230593	**Testing, Adjusting & Balancing for HVAC**							
	Testing, Adjusting & Balancing		MH					
	Subtotal							
230700	**HVAC Insulation**							
	1/2" Fiberglass Pipe Insulation		LF					
	1 1/2" Thk Duct Board		SF					
	1 1/2" Thk Duct Wrap		SF					
	Subtotal							
230900	**Instrumentation and Control for HVAC & Sequence of Operation**							
	AC 1,2 Packaged Air Conditioners 2,000 CFM w/ DX Electrical Coils		PTS					
	MAU 1,2 Gas Fired Makeup Air Unit 17,500 CFM 1,039 MBH		PTS					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder: _____

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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
	MAU 3 Gas Fired Makeup Air Unit 19,000 CFM, 1,228 MBH		PTS					
	TX 1 Roof Fan 900 CFM @ .1", 1/2 HP		PTS					
	EX 1 Roof Fan 35,000 CFM @ 1", 15 HP		PTS					
	EX 2 Roof Fan 19,000 CFM @ .75", 7.5 HP		PTS					
	Electrical Unit Heater 3.1 KW		PTS					
	UH A Electrical Unit Heater 4.8 KW		PTS					
	UH B Electrical Unit Heater 6 KW		PTS					
	Carbon Monoxide Detection Systems (2 Panels, 10 Dectectors)		LS					
	Subtotal							
232113	**Hydronic Piping & Accessories**							
	1" L Copper Tubing		LF					
	3/4" L Copper Tubing		LF					
	Wrought Copper Fittings		EA					
	Hangers		EA					
	Solder, Flux, Gas, Etc.		LS					
	Subtotal							
233113	**Metal Ducts**							
	Galvanized Ductwork		LBS					
	Double Walled Plenums		SF					
	Double Walled Flue Pipe w/ Ftgs, Accessories		LF					
	Canvas Flexible Connections		EA					
	Fire Dampers		SF					
	Volume Dampers		EA					
	Kynar Finish Louvers		EA					
	Fire Smoke Dampers		EA					
	Motorized Dampers		EA					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder:

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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
233117	**Acoustical Treatment**							
	1" Thk Duct Liner		SF					
	Subtotal							
233713	**Diffusers, Registers, and Grilles**							
	Garage Ventilation Grilles		EA					
	Garage Exhaust Grilles		EA					
	Bathroom Exhaust Grilles		EA					
	Supply Air Diffusers		EA					
	Return Air Grilles		EA					
	Subtotal							
236450	**HVAC Equipment**							
	AC 1,2 Packaged Air Conditioners 2,000 CFM w/ DX Electrical Coils		EA					
	MAU 1,2 Gas Fired Makeup Air Unit 17,500 CFM 1,039 MBH		EA					
	MAU 3 Gas Fired Makeup Air Unit 19,000 CFM, 1,228 MBH		EA					
	TX 1 Roof Fan 900 CFM @ .1", 1/2 HP		EA					
	EX 1 Roof Fan 35,000 CFM @ 1", 15 HP		EA					
	EX 2 Roof Fan 19,000 CFM @ .75", 7.5 HP		EA					
	Electrical Unit Heater 3.1 KW		EA					
	UH A Electrical Unit Heater 4.8 KW		EA					
	UH B Electrical Unit Heater 6 KW		EA					
	CP Air Conditioning Condensate Pumps w/ Reservoirs		EA					
	Magnetic Motor Starters		EA					
	Subtotal							
Division 26	**Electrical**							
260500	**Common Work Results for Electrical (Included w/ 260519, 262400, 262416, 262923, 283111)**							

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building

Location: 356 Flushing Avenue, Brooklyn NY 11205

Bidder: _____

DDC ID: EP6-KENT2

Sponsor Agency: DEP

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
260519	**Basic Materials and Methods**							
	Light Fixtures:							
	Allowances, no schedule provided							
	Type LA 2x4 Layin Dir/Indir		EA					
	Type LD 8' Indust		EA					
	Type LE wall mt fluor		EA					
	Type LE EM wall mt fluor		EA					
	Relocate Exist 8' Fixt		EA					
	Emergency Battery w/ 2 Heads		EA					
	Exit		EA					
	Emergency Battery/ Exit Combo		EA					
	Type LB linear fluor		LF					
	Type LC linear slot fluor		LF					
	Type LF linear slot fluor		LF					
	Branch Circuitry:							
	3/4" Emt, 4#12		LF					
	MC Cable		LF					
	Wiring Devices:							
	Switches		EA					
	Occupancy Sensor		EA					
	Duplex Receptacles		EA					
	Receptacles Quad		EA					
	Receptacles GFI		EA					
	Receptacles GFI WP		EA					
	Heater conn		EA					
	Manual Snap Switch Starter		EA					
	Tel/Data Backbox, Stubup		EA					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder:

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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
	Power Circuitry:							
	3/4" Rigid, 4#10		LF					
	2 1/2" Rigid, 4 4/0		LF					
	3" Rigid, 3 500 Mcm		LF					
	3 1/2" Rigid, 4 500 Mcm		LF					
	3/4" Emt, 4#10		LF					
	1" Emt, 4#6		LF					
	1 1/4" Emt, 4#4		LF					
	1 1/4" Emt, 4#3		LF					
	2 1/2" Emt, 4 4/0		LF					
	Temp Power and Lighting		LS					
	Misc Demo, Removals		LS					
	Subtotal							
262400	**120/ 208V Electric Service System:**							
	1600 AMP SEB, Replace Ex		EA					
	1600 AMP CT Cabinet		EA					
	800 AMP Service Disconnect		EA					
	1200 AMP Fire Pump Service Disconnect		EA					
	Refeed Ex 400 AMP Meter		EA					
	Subtotal							
262416	**Electrical Distribution System:**							
	225 AMP Panel Board		EA					
	800 AMP Main Distr Board		EA					
	Subtotal							
262923	**Electrical Power Equipment:**							
	Heat Trace Power Conn		EA					
	30/1 Amp Disconnect		EA					
	30 Amp Disconnect		EA					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder:

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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
	60/2 Amp Disconnect		EA					
	60 Amp Disconnect		EA					
	100 Amp Disconnect		EA					
	Install Nema 0 Starter FBO		EA					
	Install Nema 3 Starter FBO		EA					
	Install Fire Pump CP FBO		EA					
	Install Jockey Pump CP FBO		EA					
	Install 60 Amp Control Panel FBO		EA					
	Subtotal							
Division 28	**Electronic Safety and Security**							
283111	**Automatic Fire Alarm System**							
	Fire Alarm							
	3/4" RGS, FA Cable		LF					
	Pull Station		EA					
	Smoke Detector		EA					
	Duct Detector		EA					
	Zone Indicating Panel		EA					
	Central Equipment FACP		LS					
	Fu Cutout		EA					
	Misc Connections		EA					
	Subtotal							
Division 32	**Exterior Improvements**							
	Sawcut & Remove Sidewalk For New Street Tree Pits		SF					
	New Street Trees		EA					
	Granite Paver Blocks		LF					
	Topsoil Fill @ New Street Tree Pits 1' Thick		CY					
	Mulch @ New Street Tree Pits 3" Thick		CY					
	Excavate For Tree Pits & Dispose Of Excess Material		CY					

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Rehabilitation and Upgrade of DEP Shaft Maintenance Building
Location: 356 Flushing Avenue, Brooklyn NY 11205
Bidder:

DDC ID: EP6-KENT2
Sponsor Agency: DEP

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
	Extend Existing Tree Pits:							
	Sawcut Remove Sidewalk		SF					
	Granite Block Pavers		LF					
	Excavate For Extended Tree Pits & Dispose Of Excess Material		CY					
	Mulch @ Extended Street Tree Pits 3" Thick		CY					
	Topsoil Fill @ Extended Street Tree Pits 1' Thick		CY					
	Sawcut & Remove Sidewalk For Combined Water Service Work		SF					
	Replace Sidewalk After Combined Water Service Work Is Complete		SF					
	Remove / Replace Existing Steel Faced Curb		LF					
	Subtotal							
	TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK							

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ATTACHEMENT 1 – BID INFORMATION
PROJECT ID: EP-KENT2

DESCRIPTION AND LOCATION OF WORK:

Rehabilitation and Upgrade of DEP Shaft Maintenance Building
356 Flushing Avenue
Brooklyn, NY 11215
E-PIN: 85013B0027 / DDC PIN: 8502014CR0001C

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: **TUESDAY, NOVEMBER 19, 2013**
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:	**TUESDAY, NOVEMBER 19, 2013 @ 2:00 pm**
	LATE BIDS WILL NOT BE ACCEPTED

PRE-BID CONFERENCE:

PLACE	**NYC Department of Design and Construction 30-30 Thomson Avenue Lo9ng Island City, NY 11101**
DATE AND HOUR	**WEDNESDAY, NOVEMBER 6, 2013 AT 10:00AM**
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 $ 1,000,000.00.

(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 excess of $1,000,000.00. 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) 391-2200 or (718) 391-2608 Fax: (718) 391-2615

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

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:

_____ Contractor has received a willful violation issued by OSHA or New York City Department of Buildings (NYCDOB) within the last three years.

_____ Contractor has had an incident requiring OSHA notification within 8 hours (i.e., fatality, or hospitalization of three or more employees).

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.

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

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)

_____ Contractor previously audited by the DDC Office of Site Safety.

DDC Project Number(s): _____
_____

_____ Accident on previous DDC Project(s).

_____ 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].

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

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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Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.

Mayor's Office of Contract Services

	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

Certificate of No Change Form

Mayor's Office of Contract Services

- 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.

Mayor's Office of Contract Services

	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

Certificate of No Change Form

Mayor's Office of Contract Services

- 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: _____

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 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

2a. If you are certified as an **MBE, WBE,** or **LBE,** 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 ____

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

5. _____
Employer Identification Number or Federal Tax I.D./ Email Address

6. _____
Company Name

7. _____
Company Address and Zip Code

8. _____
Chief Operating Officer Telephone Number

9 _____
Designated Equal Opportunity Compliance Officer Telephone Number
(If same as Item #7, write "same")

10. _____
Name of Prime Contractor and Contact Person
(If same as Item #5, write "same")

11. Number of employees in your company: _____

FOR OFFICIAL USE ONLY: File No._____

12. Contract information:

(a) _____ (b) _____
Contracting Agency (City Agency) Contract Amount

(d) _____ (e) _____
Procurement Identification Number (PIN) Contract Registration Number (CT#)

(f) _____ (g) _____
Projected Commencement Date Projected Completion Date

(h) Description and location of proposed contract:

_____

_____

13. 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.

14. 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.

15. 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: _____

16. 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.

17. 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

18. 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?

19. To comply with the Immigration Reform and Control Act of 1986 when <u>and of whom</u> 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___

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

_____

_____

21. 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.

_____

_____

22. 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.

_____

_____

23. Does the company have a current affirmative action plan(s) (AAP)
_____Minorities and Women
_____Individuals with handicaps
_____Other. Please specify _____

24. 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.

25. 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.

26. 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.

27. 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).

_____

_____

28. 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).

_____

_____

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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/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

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FMS ID: **EP6-KENT2**

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
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 WORK**

Rehabilitation and Upgrade of DEP Shaft Maintenance Building

LOCATION: **356 Flushing Avenue**
BOROUGH: **Brooklyn 11215**
CITY OF NEW YORK

_____
Contractor

Dated _____ , 20_____

Entered in the Comptroller's Office

_____
First Assistant Bookkeeper

Dated _____ , 20_____

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
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____

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

PROJECT ID: **EP6-KENT2**

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 2 OF 3

PROJECT LABOR AGREEMENT
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

Rehabilitation and Upgrade of DEP Shaft Maintenance Building

LOCATION: **356 Flushing Avenue**
BOROUGH: **Brooklyn 11215**
CITY OF NEW YORK

CONTRACT NO. 1 **GENERAL CONSTRUCTION WORK**

Environmental Protection Agency

Deborah Berke & Partners Architects LLP

Date: **August 13, 2013**

14-024

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
TELEPHONE (718) 391-1000
WEBSITE www.nyc.gov/buildnyc

VOLUME 2 OF 3

PROJECT LABOR AGREEMENT
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

NOTICE:

THIS CONTRACT IS NOT SUBJECT TO THE REQUIREMENTS OF THE WICKS LAW FOR SEPARATE PRIME CONTRACTORS

This contract is subject to a Project Labor Agreement ("PLA"). In accordance with the Labor Law, the requirements of the Wicks Law for separate prime contractors do not apply to any project that is covered by a PLA. Accordingly, the requirements of the Wicks Law for separate prime contractors do not apply to this Project. However, the Contract Documents for this Project (General Conditions, Drawings and Specifications) were prepared as if the requirements of the Wicks Law for separate prime contractors did apply. To correct this situation, the bidder is advised that the Contract Documents are revised as set forth below.

(A) **Delete any and all references to separate responsibilities, separate specifications, separate drawings and/or separate contracts for the four subdivisions of the work listed below:**

- **General Construction Work (Contract No. 1)**
- **Plumbing Work (Contract No. 2)**
- **HVAC & Fire Protection Work (Contract No. 3)**
- **Electrical Work (Contract No. 4)**

(B) **Revise all such references to indicate that:**

- **The Project consists of a single contract, the Contract for General Construction Work.**
- **All responsibilities and obligations in the Contract Documents assigned to the separate Contractors for the four subdivisions of the work listed above are the responsibility of the Contractor 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, including all responsibilities and obligations assigned to the separate Contractors for the four subdivisions of the work listed above.**

(C) Revise any and all references to Contacts Nos. 2, 3 and 4 to refer to Contract No. 1.

(D) Revise the specifications for plumbing work to require Contractor for General Construction Work to engage a Licensed Plumber to perform the required plumbing work.

(E) Revise the specifications for electrical work to require Contractor for General Construction Work to engage a Licensed Electrician to perform the required electrical work.

NOTICE:

THIS CONTRACT IS SUBJECT TO A PROJECT LABOR AGREEMENT

This contract is subject to the attached Project Labor Agreement ("PLA") entered into between the City and the Building and Construction Trades Council of Greater New York ("BCTC") affiliated Local Unions. By submitting a bid, the Contractor agrees that if awarded the Contract the PLA is binding on the Contractor and all subcontractors of all tiers. The bidder to be awarded the contract will be required to execute the attached Letter of Assent prior to award. Contractor shall include in any subcontract a requirement that the subcontractor, and sub-subcontractors of all tiers, become signatory to and bound to the ~~PLA~~ with respect to the subcontracted work. Contractor will also be required to have all subcontractors of all tiers execute the attached Letter of Assent prior to such subcontractors performing any work on the Project. Bidders are advised that the City of New York and City agencies have entered into multiple PLAs. The terms of each PLA, while similar, are not identical. All bidders should carefully read the entire PLA that governs this Contract.

To the extent that the terms of the PLA conflict with any other terms of the invitation for bids, including the Standard Construction Contract, the terms of the PLA shall govern. For example, the PLA section that authorizes the scheduling of a four-day work, ten hours per day on straight time at the commencement of the job, PLA Article 12, section 1, overrides the Standard Construction Contract's provision concerning a five-day work week with a maximum of eight hours in a day, Standard Construction Contract Article 37.2.1. Where, however, the invitation for bids, including the Standard Construction Contract, requires the approval of the City/Department, the PLA does not supersede or eliminate that requirement.

In addition to the various provisions regarding work rules, Contractors should take special note of the requirement that Contractors and Subcontractors make payments to designated employee benefit funds. See PLA Article 11, Section 2. The PLA also contains provisions for what occurs when a contractor or a subcontractor fails to make required payments into the benefit funds, including potentially the direct payment by the City to the benefit fund of monies owed and corresponding withholding of payments to the Contractor. See PLA Article 11, Section 2. The City strongly advises Contractors to read these provisions carefully and to include appropriate provisions in subcontracts addressing these possibilities.

This Contract is subject to the apprenticeship requirements of Labor Law §222 and to apprenticeship requirements established by the Department pursuant to Labor Law §816-b. Please be advised that the involved trades have apprenticeship programs that meet the statutory requirements of Labor Law 222(e) and the requirements set by the Department pursuant to Labor Law §816-b, contractors and subcontractors who agree to perform the Work pursuant to the PLA are participating in such apprenticeship programs within the meaning of Labor Law §222(e) and the Department's directive.

If this Contract is subject to the Minority-Owned and Women-Owned Business Enterprise ("M/WBE") program created by Local Law 129, the specific requirements of M/WBE participation for this Contract are set forth in Schedule B entitled the "Subcontractor Utilization Plan", and are detailed in a separate Notice to Prospective Contractors included with this bid package. If such requirements are included with this Contract, the City strongly advises Contractors to read those provisions, as well as PLA Article 4, Section 2(C), carefully. A list of M/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.

The local collective bargaining agreements (CBAs) that are incorporated into the PLA as PLA Schedule A Agreements are available on computer disk from the Department's Contract Officer upon the request of any prospective bidder. Please note that the "PLA Schedule A" is distinct from the Department's Schedule A that is a part of this invitation for bids.

A contact list for the participating unions is set forth after the FAQs.

Below are answers to frequently asked questions (FAQs) about this PLA:

Q1. Does a contractor need to be signatory with the unions in the NYC Building and Construction Trades Council in order to bid on projects under the PLA?

A. No, any contractor may bid by signing and agreeing to the terms of the PLA. The contractor need not be signatory with these unions by any other labor agreement or for any other project.

Q2. Does a contractor agreeing to the PLA and signing the Letter of Assent create a labor agreement with these unions outside of the project covered by the PLA?

A. No, the PLA applies only to those projects that the Contractor agrees to perform under the PLA and makes no labor agreement beyond those projects.

Q3. Does the PLA affect the subcontractors that a bidder may utilize on the project?

A. Subject to the Department's approval of subcontractors pursuant to Article 17 of the Standard Construction Contract, a contractor may use any subcontractor, union or non-union, as long as the subcontractor signs and agrees to the terms of the PLA.

Q4. Are bidders required to submit Letters of Assent signed by proposed subcontractors with their bid in order to be found responsive?

A. No, bidders do not have to submit signed Letters of Assent from their subcontractors with their bid. Subcontractors, however, will be required to sign the letter of Assent prior to being approved by the Department.

Q5. May a contractor or subcontractor use any of its existing employees to perform this work?

A. Generally labor will be referred to the contractor from the respective signatory local unions. See PLA Article 4. However, contractors and subcontractors may continue to use up to 12% of their existing, qualifying labor force for this work, in accordance with the terms of PLA Article 4, Section 2B. Certified MWBEs for which participation goals are set pursuant to NYC Administrative Code §6-129 that are not signatory to any Schedule A CBAs may use their existing employees for the 2nd, 4th , 6th and 8th employee needed on the job if their contracts are valued at or under $500,000. For contracts valued at above $500,000 but under $1,000,000, such certified MWBEs may use their own employees for the 2nd, 5th and 8th employees needed on the job in accordance with the provisions of PLA Article 4, Section 2C. If additional workers are needed by these MWBEs, the additional workers will be referred to the contractor from the signatory local unions subject to the contractor's right to meet 12% of the additional needs with its existing, qualifying employees.

Q6. Must the City set MWBE participation goals for the particular project or contract in order for a certified MWBE to utilize the provisions of PLA Article 4, Section 2C?

A. No. PLA Article 4, Section 2(C) specifies what categories of MWBEs are eligible to take advantage of this provision (i.e., those MWBEs for which the City is authorized to set participation goals under §6-129). For purposes of section 2(C), it is not necessary for the project to be subject to §6-129 or for the City to have actually set participation goals for the particular contract or project. The result is the same where a projects receives State funding and therefore is subject to the requirements of Article 15-A of the Executive Law.

Q7. May a contractor bring in union members from locals that are not signatory unions?

A. Referrals will be from the respective signatory locals and/or locals listed in schedule A of the PLA. Contractors may utilize 'traveler provisions' contained in the local collective bargaining agreements (local CBAs) where such provisions exist and/or in accordance with the provisions of PLA Article 4, Section 2.

Q8. Does a non-union employee working under the PLA automatically become a union member?

A. No, the non-union employee does not automatically become a union member by working on a project covered by the PLA. Non-union employees working under the PLA are subject to the union security provisions (i.e., union dues/agency shop fees) of the local CBAs while on the project. These employees will be enrolled in the appropriate benefit plans and earn credit toward various union benefit programs. See PLA Article 4, Section 6 and Article 11.

Q9. Are all contractors and subcontractors working under the PLA, including non-union contractors and contractors signatory to collective bargaining agreements with locals other than those that are signatories to the PLA, required to make contributions to designated employee benefit funds?

A. Contractors and subcontractors working under the PLA will be required to contribute on behalf of all employees covered by the PLA to established jointly trusteed employee benefit funds designated in the Schedule A CBAs and required to be paid on public works under any applicable prevailing wage law. See PLA Article 11, Section 2. The Agency may withhold from amounts due the contractor any amounts required to be paid, but not actually paid into any such fund by the contractor or a subcontractor. See PLA Article 11, Section 2 C.

Q10. What happens if a contractor or subcontractor fails to make a required payment to a designated employee benefit fund?

A. The PLA sets forth a process for unions to address a contractor or a subcontractor's failure to make required payments. The process includes potentially the direct payment by the City to the benefit fund of monies owed and the corresponding withholding of payments to the Contractor. See PLA Article 11, Section 2. The City strongly advises Contractors to read these provisions carefully and to include appropriate provisions in subcontracts addressing these possibilities.

Q11. Does signing on to the PLA satisfy the Apprenticeship Requirements established for this bid?

A. Yes. By agreeing to perform the Work subject to the PLA, the bidder demonstrates compliance with the apprenticeship requirements imposed by this invitation for Bids.

Q12. Does the PLA provide a standard work day across all the signatory trades?

A. Yes, all signatory trades will work an eight (8) hour day, Monday through Friday with a day shift at straight time as the standard work week. The PLA also permits a contractor to schedule a four day [within Monday through Friday] work week, ten (10) hours per day at straight time if announced at the commencement of the project. See PLA Article 12, Section 1. This is an example where the terms of the PLA override provisions of the Standard Construction Contract (compare with section 37.2 of the Standard Construction Contract).

Q13. Does the PLA create a common holiday schedule for all the signatory trades?

A. Yes, the PLA recognizes eight (8) common holidays. See PLA Article 12, Section 4.

Q14. Does the PLA provide for a standard policy for 'shift work' across all signatory trades?

A. Yes, second and third shifts may be worked with a standard 5% premium pay. In addition, a day shift does not have to be scheduled in order to work the second and third shifts at the 1.05 hourly pay rate. See PLA Article 12, Section 3.

Q15. May the Contractor schedule overtime work, including work on a weekend?

A. Yes, the PLA permits the Contractor to schedule overtime work, including work on the weekends. See PLA Article 12, Sections 2, 3, and 5. To the extent that the Agency's approval is required before a Contractor may schedule or be paid for overtime, that approval is still required notwithstanding the PLA language.

Q16. Are overtime payments affected by the PLA?

A. Yes, all overtime pay incurred Monday through Saturday will be at time and one half (1 ½). There will be no stacking or pyramiding of overtime pay under any circumstances. See PLA Article 12, Section 2. Sunday and holiday overtime will be paid according to each trades CBA.

Q17. Are there special provisions for Saturday work when a day is 'lost' during the week due to weather, power failure or other emergency?

A. Yes, when this occurs the Contractor may schedule Saturday work at weekday rates. See PLA Article 12, Section 5.

Q18. Does the PLA contain special provisions for the manning of Temporary Services?

A. Yes. Where temporary services are required by specific request of the agency or construction manager, they shall be provided by the contractor's existing employees during working hours in which a shift is scheduled for employees of the contractor. The need for temporary services during non-working hours will be determined by the agency or construction manager. There will be no stacking of trades on temporary services. See PLA Article 15.

Q19. What do the workers get paid when work is terminated early in a day due to inclement weather or otherwise cut short of 8 hours?

A. The PLA provides that employees who report to work pursuant to regular schedule and not given work will be paid two hours of straight time. Work terminated early for severe weather or emergency conditions will be paid only for time actually worked. In other instances where work is terminated early, the worker will be paid for a full day. See PLA Article 12, Sections 6 and 8.

Q20. Should a local collective bargaining agreement [local CBA] expire during the project will a work stoppage occur on a project subject to the PLA?

A. No. All the signatory unions are bound by the 'no strike' agreement as to the PLA work. Work will continue under the PLA and the otherwise expired local CBA(s) until the new local CBA(s) are negotiated and in effect. See PLA Articles 7 and 19.

Q21. May a contractor working under the PLA be subject to a strike or other boycott activity by a signatory union at another site while the contractor is a signatory to the PLA?

A. Yes. The PLA applies ONLY to work under the PLA and does not regulate labor relations at other sites even if those sites are in close proximity to PLA work.

Q22. If a contractor has worked under other PLAs in the New York City area, are the provisions in this PLA generally the same as the others?

A. While Project Labor Agreements often look similar to each other, and particular clauses are often used in multiple agreements, each PLA is a unique document and should be examined accordingly.

Q23. What happens if a dispute occurs between the contractor and an employee during the project?

A. The PLA contains a grievance and arbitration process to resolve disputes between the contractor and the employees. See PLA Article 9.

Q24. What happens if there is a dispute between locals as to which local gets to provide employees for a particular project or a particular aspect of a project?

A. The PLA provides for jurisdictional disputes to be resolved in accordance with the NY Plan. See PLA Article 10. A copy of the NY Plan is available upon request from the Department. The PLA provides that work is not to be disrupted or interrupted pending the resolution of any jurisdictional dispute. The work proceeds as assigned by the contractor until the dispute is resolved. See PLA Article 10, Section 3.

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PROJECT LABOR AGREEMENT

COVERING SPECIFIED

RENOVATION & REHABILITATION OF CITY OWNED BUILDINGS AND STRUCTURES

TABLE OF CONTENTS

PROJECT LABOR AGREEMENT COVERING SPECIFIED RENOVATION & REHABILITATION OF NEW YORK CITY OWNED FACILITIES & STRUCTURES

ARTICLE 1 - PREAMBLE

WHEREAS, the City of New York desires to provide for the cost efficient, safe, quality, and timely completion of certain rehabilitation and renovation work ("Program Work," as defined in Article 3) for Fiscal Years 2010 - 2014 in a manner designed to afford the lowest costs to the Agencies covered by this Agreement, and the Public it represents, and the advancement of permissible statutory objectives;

WHEREAS, this Project Labor Agreement will foster the achievement of these goals, inter alia, by:

(1) providing a mechanism for responding to the unique construction needs associated with this Program Work and achieving the most cost effective means of construction, including direct labor cost savings, by the Building and Construction Trades Council of Greater New York and Vicinity and the signatory Local Unions and their members waiving various shift and other hourly premiums and other work and pay practices which would otherwise apply to Program Work;

(2) expediting the construction process and otherwise minimizing the disruption to the covered Agencies' ongoing operations at the facilities that are the subject of the Agreement;

(3) avoiding the costly delays of potential strikes, slowdowns, walkouts, picketing and other disruptions arising from work disputes, reducing jobsite friction on common situs worksites, and promoting labor harmony and peace for the duration of the Program Work;

(4) standardizing the terms and conditions governing the employment of labor on the Program Work;

(5) permitting wide flexibility in work scheduling and shift hours and times to allow maximum work to be done during off hours yet at affordable pay rates;

(6) permitting adjustments to work rules and staffing requirements from those which otherwise might obtain;

(7) providing comprehensive and standardized mechanisms for the settlement of work disputes, including those relating to jurisdiction;

(8) ensuring a reliable source of skilled and experienced labor; and

(9) securing applicable New York State Labor Law exemptions.

WHEREAS, the Building and Construction Trades Council of Greater New York and Vicinity, its participating affiliated Local Unions and their members, desire to assist the City in meeting these operational needs and objectives as well as to provide for stability, security and work opportunities which are afforded by this Project Labor Agreement; and

WHEREAS, the Parties desire to maximize Program Work safety conditions for both workers and the community in the project area.

NOW, THEREFORE, the Parties enter into this Agreement:

SECTION 1. PARTIES TO THE AGREEMENT

This is a Project Labor Agreement ("Agreement") entered into by the City of New York, on behalf of itself and the Agencies covered herein, including in their capacity as construction manager of covered projects and/or on behalf of any third party construction manager which may be utilized, and the Building and Construction Trades Council of Greater New York and Vicinity ("Council") (on behalf of itself) and the signatory affiliated Local Union's ("Unions" or "Local Unions"). The Council and each signatory Local Union hereby warrants and represents that it has been duly authorized to enter into this Agreement.

ARTICLE 2 - GENERAL CONDITIONS

SECTION 1. DEFINITIONS

Throughout this Agreement, the various Union parties including the Building and Construction Trades Council of Greater New York and Vicinity and its participating affiliated Local Unions, are referred to singularly and collectively as "Union(s)" or "Local Unions"; the term "Contractor(s)" shall include any Construction Manager, General Contractor and all other

contractors, and subcontractors of all tiers engaged in Program Work within the scope of this Agreement as defined in Article 3; "Agency" means the following New York City agencies: the Department for the Aging (DFTA), Administration for Children's Services (ACS), Department of Citywide Administrative Services (DCAS), Department of Corrections (DOC), Department of Design and Construction (DDC), Fire Department (FDNY), Department of Homeless Services (DHS), Human Resources Administration (HRA), Department of Health and Mental Hygiene (DOHMH), Department of Parks and Recreation (DPR), Police Department (NYPD); Department of Sanitation (DSNY); the New York City Agency that awards a particular contract subject to this Agreement may be referred to hereafter as the "Agency"; when an Agency acts as Construction Manager, unless otherwise provided, it has the rights and obligations of a "Construction Manager" in addition to the rights and obligations of an Agency; the Building and Construction Trades Council of Greater New York and Vicinity is referred to as the "Council"; and the work covered by this Agreement (as defined in Article 3) is referred to as "Program Work."

SECTION 2. CONDITIONS FOR AGREEMENT TO BECOME EFFECTIVE

This Agreement shall not become effective unless each of the following conditions are met: the Agreement is executed by (1) the Council, on behalf of itself, (2) the participating affiliated Local Unions; and (3) the mayor of the City of New York or his designee.

SECTION 3. ENTITIES BOUND & ADMINISTRATION OF AGREEMENT

This Agreement shall be binding on all participating Unions and their affiliates, the Construction Manager (in its capacity as such) and all Contractors of all tiers performing Program Work, as defined in Article 3. The Contractors shall include in any subcontract that they let for performance during the term of this Agreement a requirement that their subcontractors, of all tiers, become signatory and bound by this Agreement with respect to that subcontracted work

falling within the scope of Article 3 and all Contractors (including subcontractors) performing Program Work shall be required to sign a "Letter of Assent" in the form annexed hereto as Exhibit "A". This Agreement shall be administered by the applicable Agency or a Construction Manager or such other designee as may be named by the Agency or Construction Manager, on behalf of all Contractors.

SECTION 4. SUPREMACY CLAUSE

This Agreement, together with the local Collective Bargaining Agreements appended hereto as Schedule A, represents the complete understanding of all signatories and supersedes any national agreement, local agreement or other collective bargaining agreement of any type which would otherwise apply to this Program Work, in whole or in part, except that Program Work which falls within the jurisdiction of the Operating Engineers Locals 14 and 15 and/or the Teamsters Local 282 will be performed under the terms and conditions set out in the Schedule A agreements of Operating Engineers Locals 14 and 15 and Teamsters Local 282. Subject to the foregoing, where a subject covered by the provisions of this Agreement is also covered by a Schedule A, the provisions of this Agreement shall prevail. It is further understood that no Contractor shall be required to sign any other agreement as a condition of performing Program Work. No practice, understanding or agreement between a Contractor and a Local Union which is not set forth in this Agreement shall be binding on this Program Work unless endorsed in writing by the Construction Manager or such other designee as may be designated by the Agency.

SECTION 5. LIABILITY

The liability of any Contractor and the liability of any Union under this Agreement shall be several and not joint. The Construction Manager and any Contractor shall not be liable for any violations of this Agreement by any other Contractor; and the Council and

Local Unions shall not be liable for any violations of this Agreement by any other Union.

SECTION 6. THE AGENCY

The Agency (or Construction Manager where applicable) shall require in its bid specifications for all Program Work within the scope of Article 3 that all successful bidders, and their subcontractors of all tiers, become bound by, and signatory to, this Agreement. The Agency (or Construction Manager) shall not be liable for any violation of this Agreement by any Contractor. It is understood that nothing in this Agreement shall be construed as limiting the sole discretion of the Agency or Construction Manager in determining which Contractors shall be awarded contracts for Program Work. It is further understood that the Agency or Construction Manager has sole discretion at any time to terminate, delay or suspend the Program Work, in whole or part, on any Program.

SECTION 7. AVAILABILITY AND APPLICABILITY TO ALL SUCCESSFUL BIDDERS

The Unions agree that this Agreement will be made available to, and will fully apply to, any successful bidder for (or subcontractor of) Program Work who becomes signatory thereto, without regard to whether that successful bidder (or subcontractor) performs work at other sites on either a union or non-union basis and without regard to whether employees of such successful bidder (or subcontractor) are, or are not, members of any unions. This Agreement shall not apply to the work of any Contractor which is performed at any location other than the site of Program Work.

SECTION 8. SUBCONTRACTING

Contractors will subcontract Program Work only to a person, firm or corporation who is or agrees to become party to this Agreement.

ARTICLE 3-SCOPE OF THE AGREEMENT

SECTION 1. WORK COVERED

Program Work shall be limited to designated rehabilitation and renovation construction contracts bid and let by an Agency (or its Construction Manager where applicable) after the effective date of this Agreement with respect to rehabilitation and renovation work performed for an Agency on City-owned property under contracts let prior to June 30, 2014. Subject to the foregoing, and the exclusions below, such Program Work shall mean any and all contracts that predominantly involve the renovation, repair, alteration, rehabilitation or expansion of an existing City-owned building or structure within the five boroughs of New York City. Examples of Program Work include, but are not limited to, the renovation, repair, alteration and rehabilitation of an existing temporary or permanent structure, or an expansion of above ground structures located in the City on a City-owned building. This Program Work shall also include JOCS contracts, demolition work, site work, asbestos and lead abatement, painting services, carpentry services, and carpet removal and installation, to the extent incidental to such building rehabilitation of City-owned buildings or structures.

It is understood that Program Work does not include, and this Project Labor Agreement shall not apply to, any other work, including:

1. Contracts let and work performed in connection with projects carried over, recycled from, or performed under bids or rebids relating to work that were bid prior to the effective date of this Agreement or after June 30, 2014;

2. Contracts procured on an emergency basis;

3. Small purchases (purchases not more than $100,000) awarded pursuant to New York City Charter §314, New York City Charter § 316 and New York City Procurement Policy Board Rules §3-08;

4. Contracts for work on streets and bridges and for the closing or environmental remediation of landfills;

5. Contracts with not-for-profit corporations where the City is not awarding or performing the work performed for that entity;

6. Contracts with governmental entities where the City is not awarding or performing the work performed for that entity;

7. Contracts with electric utilities, gas utilities, telephone companies, and railroads, except that it is understood and agreed that these entities may only install their work to a demarcation point, e.g. a telephone closet or utility vault, the location of which is determined prior to construction and employees of such entities shall not be used to replace employees performing Program Work pursuant to this agreement; and

8. Contracts for installation of information technology that are not otherwise Program Work.

SECTION 2. TIME LIMITATIONS

In addition to falling within the scope of Article 3, Section 1, to be covered by this Agreement Program Work must be (1) advertised and let for bid after the effective date of this Agreement, and (2) let for bid prior to June 30, 2014, the expiration date of this Agreement. It is understood that this Agreement, together with all of its provisions, shall remain in effect for all such Program Work until completion, even if not completed by the expiration date of the Agreement. If Program Work otherwise falling within the scope of Article 3, Section 1 is not let for bid by the expiration date of this Agreement, this Agreement may be extended to that work by mutual agreement of the parties.

SECTION 3. EXCLUDED EMPLOYEES

The following persons are not subject to the provisions of this Agreement, even though performing Program Work:

A. Superintendents, supervisors (excluding general and forepersons

specifically covered by a craft's Schedule A), engineers, professional engineers and/or licensed architects engaged in inspection and testing, quality control/assurance personnel, timekeepers, mail carriers, clerks, office workers, messengers, guards, technicians, non-manual employees, and all professional, engineering, administrative and management persons;

B.. Employees of the Agency, New York City, or any other municipal or State agency, authority or entity, or employees of any other public employer, even though working on the Program site while covered Program Work is underway;

C. Employees and entities engaged in off-site manufacture, modifications, repair, maintenance, assembly, painting, handling or fabrication of project components, materials, equipment or machinery or involved in deliveries to and from the Program site, except to the extent they are lawfully included in the bargaining unit of a Schedule A agreement;

D. Employees of the Construction Manager (except that in the event the Agency engages a Contractor to serve as Construction Manager, then those employees of the Construction Manager performing manual, on site construction labor will be covered by this Agreement);

E. Employees engaged in on-site equipment warranty work unless employees are already working on the site and are certified to perform warranty work;

F. Employees engaged in geophysical testing other than boring for core samples;

G. Employees engaged in laboratory, specialty testing, or inspections, pursuant to a professional services agreement between the Agency, or any of the Agency's other professional consultants, and such laboratory, testing, inspection or surveying firm; and

H. Employees engaged in on-site maintenance of installed equipment or systems which maintenance is awarded as part of a contract that includes Program Work but

which maintenance occurs after installation of such equipment or system and is not directly related to construction services.

SECTION 4. NON-APPLICATION TO CERTAIN ENTITIES

This Agreement shall not apply to those parents, affiliates, subsidiaries, or other joint or sole ventures of any Contractor which do not perform Program Work. It is agreed that this Agreement does not have the effect of creating any joint employment, single employer or alter ego status among the Agency (including in its capacity as Construction Manager) or any Contractor. The Agreement shall further not apply to any New York City or other municipal or State agency, authority, or entity other than a listed Agency and nothing contained herein shall be construed to prohibit or restrict the Agency or its employees, or any State, New York City or other municipal or State authority, agency or entity and its employees, from performing on or off-site work related to Program Work.

As the contracts involving Program Work are completed and accepted, the Agreement shall not have further force or effect on such items or areas except where inspections, additions, repairs, modifications, check-out and/or warranty work are assigned in writing (copy to Local Union involved) by the Agency (or Construction Manager) for performance under the terms of this Agreement.

ARTICLE 4- UNION RECOGNITION AND EMPLOYMENT

SECTION 1. PRE-HIRE RECOGNITION

The Contractors recognize the signatory Unions as the sole and exclusive bargaining representatives of all employees who are performing on-site Program Work, with respect to that work.

SECTION 2. UNION REFERRAL

A. The Contractors agree to employ and hire craft employees for Program Work covered by this Agreement through the job referral systems and hiring halls established in the Local Unions' area collective bargaining agreements. Notwithstanding this, Contractors shall have sole right to determine the competency of all referrals; to determine the number of employees required; to select employees for layoff (subject to Article 5, Section 3); and the sole right to reject any applicant referred by a Local Union, subject to the show-up payments. In the event that a Local Union is unable to fill any request for qualified employees within a 48 hour period after such requisition is made by a Contractor (Saturdays, Sundays and holidays excepted), a Contractor may employ qualified applicants from any other available source. In the event that the Local Union does not have a job referral system, the Contractor shall give the Local Union first preference to refer applicants, subject to the other provisions of this Article. The Contractor shall notify the Local Union of craft employees hired for Program Work within its jurisdiction from any source other than referral by the Union.

B. A Contractor may request by name, and the Local will honor, referral of persons who have applied to the Local for Program Work and who meet the following qualifications:

(1) possess any license required by New York State law for the Program Work to be performed;

(2) have worked a total of at least 1000 hours in the Construction field during the prior 3 years; and

(3) were on the Contractor's active payroll for at least 60 out of the 180 calendar days prior to the contract award.

No more than twelve per centum (12%) of the employees covered by this Agreement, per Contractor by craft, shall be hired through the special provisions above. Under this provision, name referrals begin with the eighth employee needed and continue on that same

basis.

C. Notwithstanding Section 2(B), above, certified MWBE contractors for which participation goals are set pursuant to New York City Administrative Code §6-129, that are not signatory to any Schedule A CBAs, with contracts valued at or under five hundred thousand ($500,000), may request by name, and the Local will honor, referral of the second (2nd), fourth (4th), sixth (6th), and eighth (8th) employee, who have applied to the Local for Program Work and who meet the following qualifications:

(1) possess any license required by New York State law for the Program Work to be performed;

(2) have worked a total of at least 1000 hours in the Construction field during the prior 3 years; and

(3) were on the Contractor's active payroll for at least 60 out of the 180 work days prior to the contract award.

For such contracts valued at above $500,000 but less than $1 million, the Local will honor referrals by name of the second (2nd), fifth (5th), and eighth (8th) employee subject to the foregoing requirements. In both cases, name referrals will thereafter be in accordance with Section 2(B), above.

D. Where a certified MWBE Contractor voluntarily enters into a Collective Bargaining Agreement ("CBA") with a BCTC Union, the employees of such Contractor at the time the CBA is executed shall be allowed to join the Union for the applicable trade subject to satisfying the Union's basic standards of proficiency for admission.

SECTION 3. NON-DISCRIMINATION IN REFERRALS

The Council represents that each Local Union hiring hall and referral system will be operated in a non-discriminatory manner and in full compliance with all applicable federal, state and local laws and regulations which require equal employment opportunities. Referrals

shall not be affected in any way by the rules, regulations, bylaws, constitutional provisions or any other aspects or obligations of union membership, policies or requirements and shall be subject to such other conditions as are established in this Article. No employment applicant shall be discriminated against by any referral system or hiring hall because of the applicant's union membership, or lack thereof.

SECTION 4: MINORITY AND FEMALE REFERRALS

In the event a Local Union either fails, or is unable to refer qualified minority or female applicants in percentages equaling the workforce participation goals adopted by the City and set forth in the Agency's (or, if applicable, Construction Manager's) bid specifications, within 48 hours of the request for same, the Contractor may employ qualified minority or female applicants from any other available source.

SECTION 5. CROSS AND QUALIFIED REFERRALS

The Local Unions shall not knowingly refer to a Contractor an employee then employed by another Contractor working under this Agreement. The Local Unions will exert their utmost efforts to recruit sufficient numbers of skilled and qualified crafts employees to fulfill the requirements of the Contractor.

SECTION 6. UNION DUES

All employees covered by this Agreement shall be subject to the union security provisions contained in the applicable Schedule A local agreements, as amended from time to time, but only for the period of time during which they are performing on-site Program Work and only to the extent of tendering payment of the applicable union dues and assessments uniformly required for union membership in the Local Unions which represent the craft in which the employee is performing Program Work. No employee shall be discriminated against at any Program Work site because of the employee's union membership or lack thereof. In the case of

unaffiliated employees, the dues payment will be received by the Local Unions as an agency shop fee.

SECTION 7. CRAFT FOREPERSONS AND GENERAL FOREPERSONS

The selection of craft forepersons and/or general forepersons and the number of forepersons required shall be solely the responsibility of the Contractor except where otherwise provided by specific provisions of an applicable Schedule A, and provided that all craft forepersons shall be experienced and qualified journeypersons in their trade as determined by the appropriate Local Union. All forepersons shall take orders exclusively from the designated Contractor representatives. Craft forepersons shall be designated as working forepersons at the request of the Contractor, except when an existing local Collective Bargaining Agreement prohibits a foreperson from working when the craft persons he is leading exceed a specified number.

ARTICLE 5- UNION REPRESENTATION

SECTION 1. LOCAL UNION REPRESENTATIVE

Each Local Union representing on-site employees shall be entitled to designate in writing (copy to Contractor involved and Construction Manager) one representative, and/or the Business Manager, who shall be afforded access to the Program Work site.

SECTION 2. STEWARDS

A. Each Local Union shall have the right to designate a working journey person as a Steward and an alternate, and shall notify the Contractor and Construction Manager of the identity of the designated Steward (and alternate) prior to the assumption of such duties. Stewards shall not exercise supervisory functions and will receive the regular rate of pay for their craft classifications. All Stewards shall be working Stewards.

B. In addition to their work as an employee, the Steward shall have the right

to receive complaints or grievances and to discuss and assist in their adjustment with the Contractor's appropriate supervisor. Each Steward shall be concerned with the employees of the Steward's trade and, if applicable, subcontractors of their Contractor, but not with the employees of any other trade Contractor. No Contractor shall discriminate against the Steward in the proper performance of Union duties.

C. The Stewards shall not have the right to determine when overtime shall be worked, or who shall work overtime except pursuant to a Schedule A provision providing procedures for the equitable distribution of overtime.

SECTION 3. LAYOFF OF A STEWARD

Contractors agree to notify the appropriate Union 24 hours prior to the layoff of a Steward, except in cases of discipline or discharge for just cause. If a Steward is protected against layoff by a Schedule A provision, such provision shall be recognized to the extent the Steward possesses the necessary qualifications to perform the work required. In any case in which a Steward is discharged or disciplined for just cause, the Local Union involved shall be notified immediately by the Contractor.

ARTICLE 6- MANAGEMENT'S RIGHTS

SECTION 1. RESERVATION OF RIGHTS

Except as expressly limited by a specific provision of this Agreement, Contractors retain full and exclusive authority for the management of their operations including, but not limited to, the right to: direct the work force, including determination as to the number of employees to be hired and the qualifications therefore; the promotion, transfer, layoff of its employees; require compliance with the directives of the Agency including standard restrictions related to security and access to the site that are equally applicable to Agency employees, guests,

or vendors; or the discipline or discharge for just cause of its employees; assign and schedule work; promulgate reasonable Program Work rules that are not inconsistent with this Agreement or rules common in the industry and are reasonably related to the nature of work; and, the requirement, timing and number of employees to be utilized for overtime work. No rules, customs, or practices which limit or restrict productivity or efficiency of the individual, as determined by the Contractor, Agency and/or Construction Manager and/or joint working efforts with other employees shall be permitted or observed.

SECTION 2. MATERIALS, METHODS & EQUIPMENT

There shall be no limitation or restriction upon the Contractors' choice of materials, techniques, methods, technology or design, or, regardless of source or location, upon the use and installation of equipment, machinery, package units, pre-cast, pre-fabricated, pre-finished, or pre-assembled materials or products, tools, or other labor-saving devices. Contractors may, without restriction, install or use materials, supplies or equipment regardless of their source; provided, however, that where there is a Schedule "A" that includes a lawful union standards and practices clauses, then such clause as set forth in Schedule A Agreements will be complied with, unless there is a lawful Agency specification (or specification issued by a Construction Manager which would be lawful if issued by the Agency directly) that would specifically limit or restrict the Contractor's choice of materials, techniques, methods, technology or design, or, regardless of source or location, upon the use and installation of equipment, machinery, package units, pre-cast, pre-fabricated, pre-finished, or pre-assembled materials or products, tools, or other labor-saving devices, and which would prevent compliance with such Schedule A clause. The on-site installation or application of such items shall be performed by the craft having jurisdiction over such work; provided, however, it is recognized that other personnel having special qualifications may participate, in a supervisory capacity, in

the installation, check-off or testing of specialized or unusual equipment or facilities as designated by the Contractor. There shall be no restrictions as to work which is performed off-site for Program Work.

ARTICLE 7- WORK STOPPAGES AND LOCKOUTS

SECTION 1. NO STRIKES-NO LOCK OUT

There shall be no strikes, sympathy strikes, picketing, work stoppages, slowdowns, hand billing, demonstrations or other disruptive activity at the Program Work site for any reason by any Union or employee against any Contractor or employer. There shall be no other Union, or concerted or employee activity which disrupts or interferes with the operation of the Program Work or the objectives of the Agency at any Program Work site. In addition, failure of any Union or employee to cross any picket line established by any Union, signatory or non-signatory to this Agreement, or the picket or demonstration line of any other organization, at or in proximity to a Program Work site where the failure to cross disrupts or interferes with the operation of Program Work is a violation of this Article. Should any employees breach this provision, the Unions will use their best efforts to try to immediately end that breach and return all employees to work. There shall be no lockout at a Program Work site by any signatory Contractor, Agency or Construction Manager.

SECTION 2. DISCHARGE FOR VIOLATION

A Contractor may discharge any employee violating Section 1, above, and any such employee will not be eligible thereafter for referral under this Agreement for a period of 100 days.

SECTION 3. NOTIFICATION

If a Contractor contends that any Union has violated this Article, it will notify the

Local Union involved advising of such fact, with copies of the notification to the Council. The Local Union shall instruct and order, the Council shall request, and each shall otherwise use their best efforts to cause, the employees (and where necessary the Council shall use its best efforts to cause the Local Union), to immediately cease and desist from any violation of this Article. If the Council complies with these obligations it shall not be liable for the unauthorized acts of a Local Union or its members. Similarly, a Local Union and its members will not be liable for any unauthorized acts of the Council. Failure of a Contractor or the Construction Manager to give any notification set forth in this Article shall not excuse any violation of Section 1 of this Article.

SECTION 4. EXPEDITED ARBITRATION

Any Contractor or Union alleging a violation of Section 1 of this Article may utilize the expedited procedure set forth below (in lieu of, or in addition to, any actions at law or equity) that may be brought.

A. A party invoking this procedure shall notify J.J. Pierson or Richard Adelman; who shall alternate (beginning with Arbitrator J.J. Pierson) as Arbitrator under this expedited arbitration procedure. If the Arbitrator next on the list is not available to hear the matter within 24 hours of notice, the next Arbitrator on the list shall be called. Copies of such notification will be simultaneously sent to the alleged violator and Council.

B. The Arbitrator shall thereupon, after notice as to time and place to the Contractor, the Local Union involved, the Council and the Construction Manager, hold a hearing within 48 hours of receipt of the notice invoking the procedure if it is contended that the violation still exists. The hearing will not, however, be scheduled for less than 24 hours after the notice required by Section 3, above.

C. All notices pursuant to this Article may be provided by telephone, telegraph, hand delivery, or fax, confirmed by overnight delivery, to the Arbitrator, Contractor,

Construction Manager and Local Union involved. The hearing may be held on any day including Saturdays or Sundays. The hearing shall be completed in one session, which shall not exceed 8 hours duration (no more than 4 hours being allowed to either side to present their case, and conduct their cross examination) unless otherwise agreed. A failure of any Union or Contractor to attend the hearing shall not delay the hearing of evidence by those present or the issuance of an award by the Arbitrator.

D. The sole issue at the hearing shall be whether a violation of Section 1, above, occurred. If a violation is found to have occurred, the Arbitrator shall issue a Cease and Desist Award restraining such violation and serve copies on the Contractor and Union involved. The Arbitrator shall have no authority to consider any matter in justification, explanation or mitigation of such violation or to award damages (any damages issue is reserved solely for court proceedings, if any.) The Award shall be issued in writing within 3 hours after the close of the hearing, and may be issued without an Opinion. If any involved party desires an Opinion, one shall be issued within 15 calendar days, but its issuance shall not delay compliance with, or enforcement of, the Award.

E. The Agency and Construction Manager (or such other designee of the Agency) may participate in full in all proceedings under this Article.

F. An Award issued under this procedure may be enforced by any court of competent jurisdiction upon the filing of this Agreement together with the Award. Notice of the filing of such enforcement proceedings shall be given to the Union or Contractor involved, and the Construction Manager.

G. Any rights created by statute or law governing arbitration proceedings which are inconsistent with the procedure set forth in this Article, or which interfere with compliance thereto, are hereby waived by the Contractors and Unions to whom they accrue.

H. The fees and expenses of the Arbitrator shall be equally divided between the involved Contractor and Union.

SECTION 5. ARBITRATION OF DISCHARGES FOR VIOLATION

Procedures contained in Article 9 shall not be applicable to any alleged violation of this Article, with the single exception that an employee discharged for violation of Section 1, above, may have recourse to the procedures of Article 9 to determine only if the employee did, in fact, violate the provisions of Section 1 of this Article; but not for the purpose of modifying the discipline imposed where a violation is found to have occurred.

ARTICLE 8 - LABOR MANAGEMENT COMMITTEE

SECTION 1. SUBJECTS

The Program Labor Management Committee will meet on a regular basis to: 1) promote harmonious relations among the Contractors and Unions; 2) enhance safety awareness, cost effectiveness and productivity of construction operations; 3) protect the public interests; 4) discuss matters relating to staffing and scheduling with safety and productivity as considerations; and 5) review efforts to meet applicable participation goals for MWBEs and workforce participation goals for minority and female employees.

SECTION 2. COMPOSITION

The Committee shall be jointly chaired by a designee of the Agency and the President of the Council. It may include representatives of the Local Unions and Contractors involved in the issues being discussed. The parties may mutually designate an MWBE representative to participate in appropriate Committee discussions. The Committee may conduct business through mutually agreed upon sub-committees.

ARTICLE 9- GRIEVANCE & ARBITRATION PROCEDURE

SECTION 1. PROCEDURE FOR RESOLUTION OF GRIEVANCES

Any question, dispute or claim arising out of, or involving the interpretation or application of this Agreement (other than jurisdictional disputes or alleged violations of Article 7, Section 1) shall be considered a grievance and shall be resolved pursuant to the exclusive procedure of the steps described below, provided, in all cases, that the question, dispute or claim arose during the term of this Agreement.

Step 1:

(a) When any employee covered by this Agreement feels aggrieved by a claimed violation of this Agreement, the employee shall, through the Local Union business representative or job steward give notice of the claimed violation to the work site representative of the involved Contractor and the Construction Manager. To be timely, such notice of the grievance must be given within 7 calendar days after the act, occurrence or event giving rise to the grievance. The business representative of the Local Union or the job steward and the work site representative of the involved Contractor shall meet and endeavor to adjust the matter within 7 calendar days after timely notice has been given. If they fail to resolve the matter within the prescribed period, the grieving party, may, within 7 calendar days thereafter, pursue Step 2 of the grievance procedure by serving the involved Contractor with written copies of the grievance setting forth a description of the claimed violation, the date on which the grievance occurred, and the provisions of the Agreement alleged to have been violated. Grievances and disputes settled at Step 1 are non-precedential except as to the specific Local Union, employee and Contractor directly involved unless the settlement is accepted in writing by the Construction Manager (or designee) as creating a precedent.

(b) Should any signatory to this Agreement have a dispute (excepting jurisdictional disputes or alleged violations of Article 7, Section 1) with any other signatory to

this Agreement and, if after conferring, a settlement is not reached within 7 calendar days, the dispute shall be reduced to writing and proceed to Step 2 in the same manner as outlined in subparagraph (a) for the adjustment of employee grievances.

Step 2:

The Business Manager or designee of the involved Local Union, together with representatives of the involved Contractor, Council and the Construction Manager (or designee), shall meet in Step 2 within 7 calendar days of service of the written grievance to arrive at a satisfactory settlement.

Step 3:

(a) If the grievance shall have been submitted but not resolved in Step 2, any of the participating Step 2 entities may, within 21 calendar days after the initial Step 2 meeting, submit the grievance in writing (copies to other participants, including the Construction Manager or designee) to J.J. Pierson or Richard Adelman, who shall act, alternately (beginning with Arbitrator J.J. Pierson), as the Arbitrator under this procedure. The Labor Arbitration Rules of the American Arbitration Association shall govern the conduct of the arbitration hearing, at which all Step 2 participants shall be parties. The decision of the Arbitrator shall be final and binding on the involved Contractor, Local Union and employees and the fees and expenses of such arbitrations shall be borne equally by the involved Contractor and Local Union.

(b) Failure of the grieving party to adhere to the time limits set forth in this Article shall render the grievance null and void. These time limits may be extended only by written consent of the Construction Manager (or designee), involved Contractor and involved Local Union at the particular step where the extension is agreed upon. The Arbitrator shall have authority to make decisions only on the issues presented to him and shall not have the authority to change, add to, delete or modify any provision of this Agreement.

SECTION 2. LIMITATION AS TO RETROACTIVITY

No arbitration decision or award may provide retroactivity of any kind exceeding 60 calendar days prior to the date of service of the written grievance on the Construction Manager and the involved Contractor or Local Union.

SECTION 3. PARTICIPATION BY AGENCY AND/OR CONSTRUCTION MANAGER

The Agency and Construction Manager (or such other designee of the Agency) shall be notified by the involved Contractor of all actions at Steps 2 and 3 and, at its election, may participate in full in all proceedings at these Steps, including Step 3 arbitration.

ARTICLE 10 - JURISDICTIONAL DISPUTES

SECTION 1. NO DISRUPTIONS

There will be no strikes, sympathy strikes, work stoppages, slowdowns, picketing or other disruptive activity of any kind arising out of any jurisdictional dispute. Pending the resolution of the dispute, the work shall continue uninterrupted and as assigned by the Contractor. No jurisdictional dispute shall excuse a violation of Article 7.

SECTION 2. ASSIGNMENT

All Program Work assignments shall be made by the Contractor to unions affiliated with the BCTC consistent with the New York Plan for the Settlement of Jurisdictional Disputes ("New York Plan") and its Greenbook decisions, if any. Where there are no applicable Greenbook decisions, assignments shall be made in accordance with the provisions of the New York Plan and local industry practice.

SECTION 3. NO INTERFERENCE WITH WORK

There shall be no interference or interruption of any kind with the Program Work while any jurisdictional dispute is being resolved. The work shall proceed as assigned by the

Contractor until finally resolved under the applicable procedure of this Article. The award shall be confirmed in writing to the involved parties. There shall be no strike, work stoppage or interruption in protest of any such award.

ARTICLE 11 - WAGES AND BENEFITS

SECTION 1. CLASSIFICATION AND BASE HOURLY RATE

All employees covered by this Agreement shall be classified in accordance with the work performed and paid the hourly wage rates applicable for those classifications as required by the applicable prevailing wage laws.

SECTION 2. EMPLOYEE BENEFITS

A. The Contractors agree to pay on a timely basis contributions on behalf of all employees covered by this Agreement to those established jointly trusteed employee benefit funds designated in Schedule A (in the appropriate Schedule A amounts), provided that such benefits are required to be paid on public works under any applicable prevailing wage law. Bona fide jointly trusteed fringe benefit plans established or negotiated through collective bargaining during the life of this Agreement may be added if similarly required under applicable prevailing wage law. Contractors, not otherwise contractually bound to do so, shall not be required to contribute to benefits, trusts or plans of any kind which are not required by the prevailing wage law provided, however, that this provision does not relieve Contractors signatory to local collective bargaining agreement with any affiliated union from complying with the fringe benefit requirements for all funds contained in the CBA.

B. The Contractors agree to be bound by the written terms of the legally established jointly trusteed Trust Agreements specifying the detailed basis on which payments are to be paid into, and benefits paid out of, such Trust Funds but only with regard to Program Work done under this Agreement and only for those employees to whom this Agreement

requires such benefit payments.

C. To the extent consistent with New York City's Procurement Policy Board Rules with respect to prompt payment, as published at www.nyc.gov/ppb, §4-06(e), and in consideration of the unions' waiver of their rights to withhold labor from a contractor or subcontractor delinquent in the payment of fringe benefits contributions ("Delinquent Contractor"); the Agency agrees that where any such union and/or fringe benefit fund shall notify the Agency, the General Contractor, and the Delinquent Contractor in writing with back-up documentation that the Delinquent Contractor has failed to make fringe benefit contributions to it as provided herein and the Delinquent Contractor shall fail, within ten (10) calendar days after receipt of such notice, to furnish either proof of such payment or notice that the amount claimed by the union and/or fringe benefit fund is in dispute, the Agency shall withhold from amounts then or thereafter becoming due and payable to the General Contractor an amount equal to that portion of such payment due to the General Contractor that relates solely to the work performed by the Delinquent Contractor which the union or fringe benefit fund claims to be due it, and shall remit the amount when and so withheld to the fringe benefit fund and deduct such payment from the amounts then otherwise due and payable to the General Contractor, which payment shall, as between the General Contractor and the Agency, be deemed a payment by the Agency to the General Contractor; provided however, that in any month, such withholding shall not exceed the amount contained in the General Contractor's monthly invoice for work performed by the Delinquent Contractor. The union or its employee benefit funds shall include in its notification of delinquent payment of fringe benefits only such amount it asserts the Delinquent Contractor failed to pay on the specific project against which the claim is made and the union or its employee benefit funds may not include in such notification any amount such Delinquent Contractor may have failed to pay on any other City or non-City project.

D. In the event the General Contractor or Delinquent Contractor shall notify the Agency as above provided that the claim of the union or fringe benefit fund is in dispute, the Agency shall withhold from amounts then or thereafter becoming due and payable to the General Contractor an amount equal to that portion of such payment due to the General Contractor that relates solely to the work performed by the Delinquent Contractor which the union and/or fringe benefit fund claims to be due it, and deposit such amount when and so withheld in a separate interest-bearing account pending resolution of the dispute pursuant to the union's Schedule A agreement, and the amount so deposited together with the interest thereon shall be paid to the party or parties ultimately determined to be entitled thereto, or held until the Delinquent Contractor and union or fringe benefit fund shall otherwise agree as to the disposition thereof; provided however, that such withholding shall not exceed the amount contained in the General Contractor's monthly invoice for work performed by the Delinquent Contractor. In the event the Agency shall be required to withhold amounts from a General Contractor for the benefit of more than one fringe benefit fund, the amounts so withheld in the manner and amount prescribed above shall be applied to or for such fund in the order in which the written notices of nonpayment have been received by the Agency, and if more than one such notice was received on the same day, proportionately based upon the amount of the union and/or fringe benefit fund claims received on such day. Nothing herein contained shall prevent the Agency from commencing an interpleader action to determine entitlement to a disputed payment in accordance with section one thousand six of the civil practice law and rules or any successor provision thereto.

E. Payment to a fringe benefit fund under this provision shall not relieve the General Contractor or Delinquent Contractor from responsibility for the work covered by the payment. Except as otherwise provided, nothing contained herein shall create any obligation on

the part of the Agency to pay any union or fringe benefit fund, nor shall anything provided herein serve to create any relationship in contract or otherwise, implied or expressed, between the union/fund and/or fringe benefit and the Agency.

ARTICLE 12- HOURS OF WORK, PREMIUM PAYMENTS, SHIFTS AND HOLIDAYS

SECTION 1. WORK WEEK AND WORK DAY

A. The standard work week shall consist of 40 hours of work at straight time rates, Monday through Friday, 8 hours per day, plus ½ hour unpaid lunch period.

B. In accordance with Program needs, there shall be flexible start times with advance notice from Contractor to the Union. The Day Shift shall commence between the hours of 6:00 a.m. and 9:00 a.m. and shall end between the hours of 2:30 p.m. and 5:30 p.m., for an 8 hour day, and up to 7:30 p.m. for a 10 hour day. The Evening Shift shall commence between the hours of 3:00 p.m. and 6:00 p.m., unless different times are necessitated by the Agency's phasing plans on specific projects. The Night Shift shall commence between the hours of 11:00 p.m. and 2:00 a.m., unless different times are necessitated by the Agency's phasing plans on specific projects. Subject to the foregoing, starting and quitting times shall occur at the Program Work site designated by the Contractor.

C. Scheduling - Monday through Friday is the standard work week; 8 hours of work plus ½ hour unpaid lunch. Notwithstanding any other provision of this Agreement, a contractor may schedule a four day work week, 10 hours per day at straight time rates, plus a ½ hour unpaid lunch, at the commencement of the job.

D. Notice - Contractors shall provide not less than 5 days prior notice to the Local Union involved as to the work week and work hour schedules to be worked or such lesser notice as may be mutually agreed upon.

SECTION 2. OVERTIME

Overtime shall be paid for any work over eight (8) hours in a day where 5/8s is scheduled or for work over ten (10) hours in a day where 4/10s is scheduled and over forty (40) hours in a week, at time and one half (1½) Monday through Saturday. All overtime work performed on Sunday and Holidays will be paid pursuant to the applicable Schedule A. There shall be no stacking or pyramiding of overtime pay under any circumstances. There will be no restriction upon the Contractor's scheduling of overtime or the nondiscriminatory designation of employees who shall be worked, including the use of employees, other than those who have worked the regular or scheduled work week, at straight time rates. The Contractor shall have the right to schedule work so as to minimize overtime or schedule overtime as to some, but not all, of the crafts and whether or not of a continuous nature.

SECTION 3. SHIFTS

A. Flexible Schedules - Scheduling of shift work, including Saturday and Sunday work, shall be within the discretion of the Contractor in order to meet Program Work schedules and existing Program Work conditions including the minimization of interference with the mission of the Agency. It is not necessary to work a day shift in order to schedule a second or third shift, or a second shift in order to schedule a third shift, or to schedule all of the crafts when only certain crafts or employees are needed. Shifts must have prior approval of the Agency or Construction Manager, and must be scheduled with not less than five work days notice to the Local Union or such lesser notice as may be mutually agreed upon.

B. Second and/or Third Shifts/Saturday and/or Sunday Work - - The second shift shall start between 3 p.m. and 6 p.m. and the third shift shall start between 11 p.m. and 2 a.m., subject to different times necessitated by the Agency phasing plans on specific projects. There shall be no reduction in shift hour work. With respect to second and third shift work there

shall be a 5% shift premium. No other premium or other payments for such work shall be required unless such work is in excess of 40 hours in the week. All employees within a classification performing Program Work will be paid at the same wage rate regardless of the shift or work scheduled work, subject only to the foregoing provisions.

C. Flexible Starting Times - Shift starting times will be adjusted by the Contractor as necessary to fulfill Program Work requirements subject to the notice requirements of paragraph A.

SECTION 4. HOLIDAYS

A. Schedule - There shall be 8 recognized holidays on the Project:

New Years Day	Labor Day
Martin Luther King Day	President's Day
Memorial Day	Thanksgiving Day
Independence Day	Christmas Day

All said holidays shall be observed on the calendar date except those holidays which occur on Saturday shall be observed on the previous Friday and those that occur on Sunday shall be observed on the following Monday.

B. Payment - Regular holiday pay, if any, for work performed on such a recognized holiday shall be in accordance with the applicable Schedule A.

C. Exclusivity - No holidays other than those listed in Section 4(A) above shall be recognized or observed.

SECTION 5. SATURDAY MAKE-UP DAYS

When severe weather, power failure, fire or natural disaster or other similar circumstances beyond the control of the Contractor prevent work from being performed on a regularly scheduled weekday, the Contractor may schedule a Saturday make-up day and such

time shall be scheduled and paid as if performed on a weekday. Any other Saturday work shall be paid at time and one-half (1½) . The Contractor shall notify the Local Union on the missed day or as soon thereafter as practicable if such a make-up day is to be worked.

SECTION 6. REPORTING PAY

A. Employees who report to the work location pursuant to their regular schedule and who are not provided with work shall be paid two hours reporting pay at straight time rates. An employee whose work is terminated early by a Contractor due to severe weather, power failure, fire or natural disaster of for similar circumstances beyond the Contractor's control, shall receive pay only for such time as is actually worked. In other instances in which an employee's work is terminated early (unless provided otherwise elsewhere in this Agreement), the employee shall be paid for his full shift.

B. When an employee, who has completed their scheduled shift and left the Program Work site, is "called out" to perform special work of a casual, incidental or irregular nature, the employee shall receive overtime pay at the rate of time and one-half of the employee's straight time rate for hours actually worked.

C. When an employee leaves the job or work location of their own volition or is discharged for cause or is not working as a result of the Contractor's invocation of Section 7 below, they shall be paid only for the actual time worked.

D. Except as specifically set forth in this Article there shall be no premiums, bonuses, hazardous duty, high time or other special premium payments or reduction in shift hours of any kind.

E. There shall be no pay for time not actually worked except as specifically set forth in this Article and except where an applicable Schedule A requires a full weeks' pay for forepersons.

SECTION 7. PAYMENT OF WAGES

A. Termination- Employees who are laid off or discharged for cause shall be paid in full for that which is due them at the time of termination. The Contractor shall also provide the employee with a written statement setting forth the date of lay off or discharge.

SECTION 8. EMERGENCY WORK SUSPENSION

A Contractor may, if considered necessary for the protection of life and/or safety of employees or others, suspend all or a portion of Program Work. In such instances, employees will be paid for actual time worked, except that when a Contractor requests that employees remain at the job site available for work, employees will be paid for that time at their hourly rate of pay.

SECTION 9. INJURY/DISABILITY

An employee who, after commencing work, suffers a work-related injury or disability while performing work duties, shall receive no less than 8 hours wages for that day. Further, the employee shall be rehired at such time as able to return to duties provided there is still Program Work available for which the employee is qualified and able to perform.

SECTION 10. TIME KEEPING

A Contractor may utilize brassing or other systems to check employees in and out. Each employee must check in and out. The Contractor will provide adequate facilities for checking in and out in an expeditious manner.

SECTION 11. MEAL PERIOD

A Contractor shall schedule an unpaid period of not more than 1/2 hour duration at the work location between the 3rd and 5th hour of the scheduled shift. A Contractor may, for efficiency of operation, establish a schedule which coordinates the meal periods of two or more crafts or which provides for staggered lunch periods within a craft or trade. If an employee is

required to work through the meal period, the employee shall be compensated in a manner established in the applicable Schedule A.

SECTION 12. BREAK PERIODS

There will be no rest periods, organized coffee breaks or other non-working time established during working hours. Individual coffee containers will be permitted at the employee's work location. Where 4/10s are being worked there shall be a morning and an afternoon coffee break.

ARTICLE 13 - APPRENTICES

SECTION 1. RATIOS

Recognizing the need to maintain continuing supportive programs designed to develop adequate numbers of competent workers in the construction industry and to provide craft entry opportunities for minorities, women and economically disadvantaged non-minority males, Contractors will employ apprentices in their respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured. Contractors may utilize apprentices and such other appropriate classifications in the maximum ratio permitted by the New York State Department of Labor or the maximum allowed per trade. Apprentices and such other classifications as are appropriate shall be employed in a manner consistent with the provisions of the appropriate Schedule A. The parties encourage, as an appropriate source of apprentice recruitment consistent with the rules and operations of the affiliated unions' apprentice-programs, the use of the Edward J. Malloy Initiative for Construction Skills, Non-Traditional Employment for Women and Helmets to Hardhats.

ARTICLE 14-SAFETY PROTECTION OF PERSON AND PROPERTY

SECTION 1. SAFETY REQUIREMENTS

Each Contractor will ensure that applicable OSHA and safety requirements are at all times maintained on the Program Work site and the employees and Unions agree to cooperate fully with these efforts to the extent consistent with their rights and obligations under the law. Employees will cooperate with employer safety policies and will perform their work at all times in a safe manner and protect themselves and the property of the Contractor and Agency from injury or harm, to the extent consistent with their rights and obligations under the law. Failure to do so will be grounds for discipline, including discharge.

SECTION 2. CONTRACTOR RULES

Employees covered by this Agreement shall at all times be bound by the reasonable safety, security, and visitor rules as established by the Contractors and the Construction Manager for this Program Work. Such rules will be published and posted in conspicuous places throughout the Program Work sites. Any site security and access policies established by the Construction Manager or General Contractor intended for specific application to the construction workforce for Program Work and that are not established pursuant to an Agency directive shall be implemented only after notice to the BCTC and its affiliates and an opportunity for negotiation and resolution by the Labor Management Committee.

SECTION 3. INSPECTIONS

The Contractors and Construction Manager retain the right to inspect incoming shipments of equipment, apparatus, machinery and construction materials of every kind.

ARTICLE 15 - TEMPORARY SERVICES

Temporary services, i.e. all temporary heat, water, power and light, shall only be required upon the specific request of the Agency or Construction Manager, and when so requested shall be assigned to the appropriate trade claiming jurisdiction. Temporary system coverage shall be provided by the appropriate Contractors' existing employees during working hours in which a

shift is scheduled for employees of this Contractor. The Agency or Construction Manager may determine the need for temporary system coverage requirements during non-working hours. There shall be no stacking of trades on temporary services. In the event a temporary system is claimed by multiple trades, the matter shall be resolved through the New York Plan for Jurisdictional Disputes.

ARTICLE 16 - NO DISCRIMINATION

SECTION 1. COOPERATIVE EFFORTS

The Contractors and Unions agree that they will not discriminate against any employee or applicant for employment because of creed, race, color, religion, sex, sexual orientation, national origin, marital status, citizenship status, disability, age or any other status provided by law, in any manner prohibited by law or regulation.

SECTION 2. LANGUAGE OF AGREEMENT

The use of the masculine or feminine gender in this Agreement shall be construed as including both genders.

ARTICLE 17- GENERAL TERMS

SECTION 1. PROJECT RULES

A. The Construction Manager and the Contractors shall establish such reasonable Program Work rules that are not inconsistent with this Agreement or rules common in the industry and are reasonably related to the nature of work. These rules will be explained at the pre-job conference and posted at the Program Work sites and may be amended thereafter as necessary. Notice of amendments will be provided to the appropriate Local Union. Failure of an employee to observe these rules and regulations shall be grounds for discipline, including discharge. The fact that no order was posted prohibiting a certain type of misconduct shall not be a defense to an employee disciplined or discharged for such misconduct when the action taken is

for cause.

B. The parties adopt and incorporate the BCTC's Standards of Excellence as annexed hereto as Exhibit "B".

SECTION 2. TOOLS OF THE TRADE

The welding/cutting torch and chain fall are tools of the trade having jurisdiction over the work performed. Employees using these tools shall perform any of the work of the trade. There shall be no restrictions on the emergency use of any tools or equipment by any qualified employee or on the use of any tools or equipment for the performance of work within the employee's jurisdiction.

SECTION 3. SUPERVISION

Employees shall work under the supervision of the craft foreperson or general foreperson.

SECTION 4. TRAVEL ALLOWANCES

There shall be no payments for travel expenses, travel time, subsistence allowance or other such reimbursements or special pay except as expressly set forth in this Agreement.

SECTION 5. FULL WORK DAY

Employees shall be at their work area at the starting time established by the Contractor, provided they are provided access to the work area. The signatories reaffirm their policy of a fair day's work for a fair day's wage.

SECTION 6. COOPERATION AND WAIVER

The Construction Manager, Contractors and the Unions will cooperate in seeking any NYS Department of Labor, or any other government, approvals that may be needed for implementation of any terms of this Agreement. In addition, the Council, on their own behalf and

on behalf of its participating affiliated Local Unions and their individual members, intend the provisions of this Agreement to control to the greatest extent permitted by law, notwithstanding contrary provisions of any applicable prevailing wage, or other, law and intend this Agreement to constitute a waiver of any such prevailing wage, or other, law to the greatest extent permissible only for work within the scope of this Agreement, including specifically, but not limited to those provisions relating to shift, night, and similar differentials and premiums. This Agreement does not, however, constitute a waiver or modification of the prevailing wage schedules applicable to work not covered by this Agreement.

ARTICLE 18. SAVINGS AND SEPARABILITY

SECTION 1. THIS AGREEMENT

In the event that the application of any provision of this Agreement is enjoined, on either an interlocutory or permanent basis, or is otherwise determined to be in violation of law, or if such application may cause the loss of Program funding or any New York State Labor Law exemption for all or any part of the Program Work, the provision or provisions involved (and/or its application to particular Program Work, as necessary) shall be rendered, temporarily or permanently, null and void, but where practicable the remainder of the Agreement shall remain in full force and effect to the extent allowed by law (and to the extent no funding or exemption is lost), unless the part or parts so found to be in violation of law or to cause such loss are wholly inseparable from the remaining portions of the Agreement and/or are material to the purposes of the Agreement. In the event a court of competent jurisdiction finds any portion of the Agreement to trigger the foregoing, the parties will immediately enter into negotiations concerning the substance affected by such decision for the purpose of achieving conformity with the court determination and the intent of the parties hereto for contracts to be let in the future.

SECTION 2. THE BID SPECIFICATIONS

In the event that the Agency's (or Construction Manager's) bid specifications, or other action, requiring that a successful bidder (and subcontractor) become signatory to this Agreement is enjoined, on either an interlocutory or permanent basis, or is otherwise determined to be in violation of law, or may cause the loss of Program funding or any New York State Labor Law exemption for all or any part of the Program Work, such requirement (and/or its application to particular Program Work, as necessary) shall be rendered, temporarily or permanently, null and void, but where practicable the Agreement shall remain in full force and effect to the extent allowed by law and to the extent no funding or exemption is lost). In such event, the Agreement shall remain in effect for contracts already bid and awarded or in construction only where the Agency and Contractor voluntarily accepts the Agreement. The parties will enter into negotiations as to modifications to the Agreement to reflect the court or other action taken and the intent of the parties for contracts to be let in the future.

SECTION 3. NON-LIABILITY

In the event of an occurrence referenced in Section 1 or Section 2 of this Article, neither the Agency, the Construction Manager, any Contractor, nor any Union shall be liable, directly or indirectly, for any action taken, or not taken, to comply with any court order or injunction, other determination, or in order to maintain funding or a New York State Labor Law exemption for Program Work. Bid specifications will be issued in conformance with court orders then in effect and no retroactive payments or other action will be required if the original court determination is ultimately reversed.

SECTION 4. NON-WAIVER

Nothing in this Article shall be construed as waiving the prohibitions of Article 7 as to signatory Contractors and signatory Unions.

ARTICLE 19 - FUTURE CHANGES IN SCHEDULE A AREA CONTRACTS

SECTION 1. CHANGES TO AREA CONTRACTS

A. Schedule A to this Agreement shall continue in full force and effect until the Contractor and/or Union parties to the Area Collective Bargaining Agreements which are the basis for Schedule A notify the Agency and Construction Manager in writing of the hourly rate changes agreed to in that Area Collective Bargaining which are applicable to work covered by this Agreement and their effective dates.

B. It is agreed that any provisions negotiated into Schedule A collective bargaining agreements will not apply to work under this Agreement if such provisions are less favorable to those uniformly required of contractors for construction work normally covered by those agreements; nor shall any provision be recognized or applied on Program Work if it may be construed to apply exclusively, or predominantly, to work covered by this Agreement.

C. Any disagreement between signatories to this Agreement over the incorporation into Schedule A of provisions agreed upon in the renegotiation of Area Collective Bargaining Agreements shall be resolved in accordance with the procedure set forth in Article 9 of this Agreement.

SECTION 2. LABOR DISPUTES DURING AREA CONTRACT NEGOTIATIONS

The Unions agree that there will be no strikes, work stoppages, sympathy actions, picketing, slowdowns or other disruptive activity or other violations of Article 7 affecting the Program Work by any Local Union involved in the renegotiation of Area Local Collective Bargaining Agreements nor shall there be any lock-out on such Program Work affecting a Local Union during the course of such renegotiations.

ARTICLE 20 - WORKERS' COMPENSATION ADR

SECTION 1.

An ADR program may be negotiated and participation in the ADR Program will be optional by trade.

ARTICLE 21 - HELMETS TO HARDHATS

Section 1.

The Contractors and the Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Contractors and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

Section 2.

The Unions and Contractors agree to coordinate with the Center to create and maintain an integrated database of veterans interested in working on this Project and of apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed and effective as of the ___ day of_____, _____.

FOR BUILDING AND CONSTRUCTION TRADES COUNCIL
OF GREATER NEW YORK AND VICINITY

BY: _____
Gary LaBarbera
President

FOR NEW YORK CITY

BY: _____
Michael R. Bloomberg
Mayor

APPROVED AS TO FORM:

_____
ACTING CORPORATION COUNSEL
NEW YORK CITY

IN WITNESS WHEREOF the parties have caused this Agreement to be executed and effective as of the ___ day of_____, _____

FOR BUILDING AND CONSTRUCTION TRADES COUNCIL
OF GREATER NEW YORK AND VICINITY

BY: _____
Gary LaBarbera
President

FOR NEW YORK CITY

BY: _____
Michael R. Bloomberg
Mayor

APPROVED AS TO FORM:

_____
ACTING CORPORATION COUNSEL
NEW YORK CITY

DEC 16 2009

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List of Signatory Unions

Blasterers and Drillers Local #29

Bricklayers Local No. 1

Boiler Makers Local No. 5

Carpenters District Council

Cement Masons No. 780

Derrickmen and Riggers Union No. 197

Concrete Workers District Council No. 16, including Cement and Concrete Workers Nos. 6-A, 18-A, and 20

Electrical Local No. 3

Drywall Tapers 1974

Elevator Constructors No. 1

Heat & Frost Insulators Local Union No. 12A

Heat & Frost Insulators Local Union No. 12

Iron Workers No. 40

Iron Workers District Council

Laborers Local No. 78 Asbestos & Lead Abatement

Iron Workers No. 361

Laborers Construction and General Building No. 79

Laborers Local 731

Lathers Metallic Local No. 46

Local Union 8A Glaziers No. 1281

Mason Tenders District Council

Metal Polishers DC 9

Painters District Council No. 9

Painters Structural Steel No. 806

Ornamental Iron Workers No. 580

Plasters Local Union No. 262

Pavers & Road Builders District Council No. 1

Plumbers No. 1

Sheet Metal Workers Local No. 28

Roofers & Waterproofers No. 8

Sheet Metal Workers Local No. 137

Steamfitters Local Union No. 638; including Metal Trades Division

Teamsters Local Union 813

Teamsters Local Union 814

Tile, Marble & Terrazzo B.A.C. Local Union No. 7

PLA Schedule A

The following Collective Bargaining Agreements, as this Schedule may be amended from time to time in accordance with the Agreement, constitute Schedule A:

(1) Agreement between the Boilermakers Association of Greater New York, Inc. and the International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers AFL-CIO, Lodge No. 5, September 1, 2006 - December 31, 2009.

(2) Agreement between Association of Cement and Concrete Contractors of New York, Inc. and Cement and Concrete Workers comprised of Local No. 6A, Local No. 18A, Local No. 20 and the Employer, July 1, 2008 - June 30, 2011.

(3) Agreement between the Cement League and the District Council of Cement and Concrete Workers; Comprised of Local No. 6A, Local No. 18A, Local No. 20; July 1, 2008 - June 30, 2011.

(4) Agreement between the Cement League and the United Cement Masons' Union Local No. 780, Clarified & Extended from October 23, 1940 to June 30, 2011.

(5) Building Construction agreement between the Building Contractors Association, Inc. and the District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America, AFL-CIO, July 1, 2006 - June 30, 2011.

(6) General Contractors Association - Carpenters 2006; Agreement Between Members of the General Contractors Association of New York, Inc. and the District Council of Carpenters of New York City and Vicinity, July 1, 2006 - June 30, 2011.

(7) Trade Agreement between Drywall Tapers and Pointers of Greater New York Local Union 1974, affiliated with International Union of Painters and Allied Trades, AFL-CIO and Drywall Taping Contractors' Association of Greater New York and the Association of Wall-Ceiling & Carpentry Industry of New York, Inc., September 6, 2006 - June 28, 2011; Independent Agreement between Local Union 1974 and Employer.

(8) Agreement between Allied Building Metal Industries, Inc. and Local Union Nos. 40 and 361 of the International Association of Bridge, Structural and Ornamental and Reinforcing Iron Workers AFL-CIO, July 1, 2008 – June 30, 2014.

(9) Agreement between Independent Contractors and Local #46 Metallic Lathers Union and Reinforcing Ironworkers of New York and Vicinity of the International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers, July 1, 2008 - June 30, 2014.

(10) Agreement of Working Conditions between the Independent Insulation Contractors Association of New York City Inc. and the International Association of Heat and Frost Insulators and Asbestos Workers Local No. 12 of New York City, 2008-2014.

(11) Mason Tenders District Council of Greater New York Master Independent Collective Bargaining Agreement, 2008-2011.

(12) Trade Agreement between District Council No. 9, International Union of Painters and Allied Trades, AFL-CIO and the Association of Master Painters and Decorators of New York, Inc. and the Association of Wall, Ceiling & Carpentry Industries of New York, Inc. and the Window and Plate Glass Dealers Association, May 1, 2005 - April 30, 2011.

(13) Trade Agreement between Enterprise Association Local Union 638 and Mechanical Contractors Association of New York, Inc., July 1, 2008 - June 30, 2011.

(14) Agreement between Allied Building Metal Industries Inc. and Architectural and Ornamental Iron Workers Local Union No. 580 AFL-CIO; July 1, 2008 – June 30, 2011.

(15) Official Working Agreement between Service Contractors Division of the Mechanical Contractors Association of New York and Enterprise Association Metal Trades Branch Local Union 638, July 1, 2007 - June 30, 2010.

(16) Agreement between Association of Contracting Plumbers of the City of New York, Inc. and Local Union No 1 of the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada, July 1, 2007 - June 30, 2010.

(17) Agreement and Working Rules between New York Electrical Contractors Association, Inc. and the Association of Electrical Contractors, Inc. and Local Union No. 3 International Brotherhood of Electrical Workers, AFL-CIO, May 10, 2007 – May 13, 2010.

(18) Official Working Agreement between Service Contractors Division of the Mechanical Contractors Association of New York, Inc. and Enterprise Association Metal Trades Branch Local Union 638, Refrigeration, Air Conditioning, Air Cooling, Oil Burner and Stoker Service and Maintenance Technicians, July 1, 2007 – June 30, 2010.

(19) Structural Steel and Bridge Painters of Greater New York, Local Union No. 806, District Council No. 9, International Union of Painters and Allied Trades, AFL-CIO, CLC and New York Structural Steel Painting Contractors Association, Inc.; Collective Bargaining Agreement, October 1, 2005 - September 30, 2011.

(20) Trade Agreement between United Derrickmen & Riggers Association, Local No. 197 of New York, All long Island, Westchester and Vicinity and Building Stone and Pre-Case Contractors Association, 2008.

(21) Agreement between the Greater New York and New Jersey Tile Contractors Association, Inc., and the Tile Setters and Tile Finishers Union of New York and New Jersey, Local Union No. 7 of the International Union of Bricklayers and Allied Craftworkers, June 8, 2009 – June 2, 2013.

(22) Agreement between The Building Contractors Association, Inc. and International Union of Operating Engineers Local 15 and 15 A, July 1, 2006-June 30, 2011.

(23) Agreement dated as of July 1, 2006 between Building Contractors Association and International Union of Operating Engineers Local 14-14B, July 1, 2006-June 30,2011.

(24) Agreement Between The Building Contractors Association, Inc. and International Union of Operating Engineers Local 15D affiliated with the AFL-CIO, July 1, 2006-June 30, 2011.

(25) Local 282 International Brotherhood of Teamsters High Rise Contract, Building Contractors Association and Independents, 2008-2013.

(26) Building, Concrete, Excavation & Common Laborers Union Local No. 731 Independent Agreement, July 1, 2006-June 30, 2012.

(27) March 17, 2009 Agreement between ThyssenKrupp Elevator Corp. and International Union of Elevator Constructors, Local 1 of NY and NJ, 2009-2014.

(28) Working Agreement Local Union No. 8 United Union of Roofers, Waterproofers and Allied Workers and Roofing and Waterproofing Contractor's Association of New York and Vicinity, July 1, 2009-June 30, 2011.

(29) Standard Form Collective Bargaining Agreement between Sheet Metal Workers' International Association Local Union #137 and the Greater New York Sign Association, July 16, 2007 – July 15, 2010.

(30) Trade Agreement between ____ and Local No. 1 New York of the International Union of Bricklayers and Allied Craftworkers, July 1, 2008 – July 30, 2011.

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Project Labor Agreement - - Letter of Assent

Dear:

The undersigned party confirms that it agrees to be a party to and be bound by the New York Agency, Project Labor Agreement as such Agreement may, from time to time, be amended by the parties or interpreted pursuant to its terms. The terms of the Project Labor Agreement, its Schedules, Addenda and Exhibits are hereby incorporated by reference herein.

The undersigned, as a Contractor or Subcontractor (hereinafter Contractor) on the Project known as _____ and located at _____ (hereinafter PROJECT), for and in consideration of the award to it of a contract to perform work on said PROJECT, and in further consideration of the mutual promises made in the Project Labor Agreement, a copy of which was received and is acknowledged, hereby:

(1) Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all schedules; amendments and supplements now existing or which are later made thereto:

(2) Agrees to be bound by the legally established collective bargaining agreements and local trust agreements as set forth in the Project Labor Agreement and this Agreement but only to the extent of Program Work and as required by the PLA.

(3) Authorizes the parties to such local trust agreements to appoint trustees and successor trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the Contractor but only to the extent of Program Work as required by the PLA.

(4) Certifies that it has no commitments or agreements that would preclude its full and complete compliance with the terms and conditions of said Agreement. The Contractor agrees to employ labor that can work in harmony with all other labor on the Project and shall require labor harmony from every lower tier subcontractor it has engaged or may engage to work on the Project. Labor harmony disputes/issues shall be subject to the Labor Management Committee provisions.

(5) Agrees to secure from any Contractor(s) (as defined in said Agreement) which is or becomes a Subcontractor (of any tier), to it, a duly executed Agreement to be Bound in from identical to this document.

Dated: _____

_____
(Name of Contractor or subcontractor)

_____
(Name of CM; GC; Contractor or Higher Level Subcontractor)

_____
(Authorized Officer & Title)

_____
(Address)

_____
(Phone) (Fax)

Contractor's State License #_____

Sworn to before me this
____ day of _____, 2009

_____
Notary Public

STANDARDS OF EXCELLENCE

The purpose of this Standard of Excellence is to reinforce the pride of every construction worker and the commitment to be the most skilled, most productive and safest workforce available to construction employers and users in the City of New York. It is the commitment of every affiliated local union to use our training and skills to produce the highest quality work and to exercise safe and productive work practices.

The rank and file members represented by the affiliated local unions acknowledge and adopt the following standards:

- ***Provide a full days work for a full days pay;***
- ***Safely work towards the timely completion of the job;***
- ***Arrive to work on time and work until the contractual quitting time;***
- ***Adhere to contractual lunch and break times;***
- ***Promote a drug and alcohol free work site;***
- ***Work in accordance with all applicable safety rules and procedures;***
- ***Allow union representatives to handle job site disputes and grievances without resort to slowdowns, or unlawful job disruptions;***
- ***Respect management directives that are safe, reasonable and legitimate;***
- ***Respect the rights of co-workers;***
- ***Respect the property rights of the owner, management and contractors.***

The Unions affiliated with the New York City Building and Construction Trades Council will expect the signatory contractors to safely and efficiently manage their jobs and the unions see this as a corresponding obligation of the contractors under this Standard of Excellence. The affiliated unions will expect the following from its signatory contractors:

- ***Management adherence to the collective bargaining agreements;***
- ***Communication and cooperation with the trade foremen and stewards;***
- ***Efficient, safe and sanitary management of the job site;***
- ***Efficient job scheduling to mitigate and minimize unproductive time;***
- ***Efficient and adequate staffing by properly trained employees by trade;***
- ***Efficient delivery schedules and availability of equipment and tools to ensure efficient job progress;***
- ***Ensure proper blueprints, specifications and layout instructions and material are available in a timely manner***
- ***Promote job site dispute resolution and leadership skills to mitigate such disputes;***
- ***Treatment of all employees in a respectful and dignified manner acknowledging their contributions to a successful project.***

The affiliated unions and their signatory contractors shall ensure that both the rank and file members and the management staff shall be properly trained in the obligations undertaken in the Standard of Excellence.

NOTICE TO BIDDERS

DAMAGES FOR DELAY PILOT PROGRAM

Please be advised that this contract is part of a pilot program in which the Standard Construction Contract provisions concerning delay damages have been revised to allow contractors to be reimbursed for specified additional costs that are attributable to a delay in the performance of the work resulting from certain acts or omissions of the City agency or its representatives. Certain changes are highlighted here to alert bidders to the pilot program. Please see Articles 11, 12.3, and 13.10 of the Standard Construction Contract for a full understanding and the actual text of the pilot program. 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.

Changes to Articles 11, 12.3, and 13.10 of the Standard Construction Contract permit contractors to make claims for delay damages relating to the following circumstances:

The failure of the City to take reasonable measures to coordinate and progress the Work;

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 constitute a material change to the Work and which have a verifiable impact on project costs.

The unavailability of the site for an extended period of time that significantly affects the scheduled completion of the contract.

The issuance by the City of a stop work order relative to a substantial portion of work for a period exceeding thirty days, that was not brought about through any action or omission of the Contractor.

Differing site conditions that were not known or 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.

Delays caused by the City's bad faith or its willful, malicious, or grossly negligent conduct;

Delays not contemplated by the parties;

Delays so unreasonable that they constitute an intentional abandonment of the Contract by the City; and

Delays resulting from the City's breach of a fundamental obligation of the Contract.

Please see Article 11.4 for provisions regarding compensable delays.

Specific exclusions to claims for damages also apply, such as for third party (non-City) acts and omissions, court orders, strikes or *force majeure* events. For provisions related to non-compensable delays, please see Article 11.5.

For those delays where damages are available, Article 11 also sets forth what costs are recoverable. Please see Article 11.7 for which costs are recoverable and which costs are non-recoverable.

Article 11 also contains provisions concerning notice and documentation of claims. Please see Articles 11.1, 11.2, and 11.6. Contractors must comply with the notice requirements in order to preserve their claims. Consequently, please read these sections carefully. Delay damages are compensable only if they were actually, reasonably and necessarily incurred and are verified by appropriate documentation submitted at the appropriate times.

Claims for delay damages are not covered by the dispute resolution process in Article 27 of the Standard Construction Contract. See Article 11.8. When the amount of delay damages are agreed upon, such damages may be paid through a change order.

NOTICE TO BIDDERS, PROPOSERS, CONTRACTORS, AND RENEWAL CONTRACTORS

This contract includes a provision concerning the protection of employees for whistleblowing activity, pursuant to New York City Local Law Nos. 30-2012 and 33-2012, effective October 18, 2012 and September 18, 2012, respectively. The provisions apply to contracts with a value in excess of $100,000.

Local Law No. 33-2012, the Whistleblower Protection Expansion Act ("WPEA"), prohibits a contractor or its subcontractor from taking an adverse personnel action against an employee or officer for whistleblower activity in connection with a City contract; requires that certain City contracts include a provision to that effect; and provides that a contractor or subcontractor may be subject to penalties and injunctive relief if a court finds that it retaliated in violation of the WPEA. The WPEA is codified at Section 12-113 of the New York City Administrative Code.

Local Law No. 30-2012 requires a contractor to prominently post information explaining how its employees can report allegations of fraud, false claims, criminality, or corruption in connection with a City contract to City officials and the rights and remedies afforded to employees for whistleblowing activity. Local Law No. 30-2012 is codified at Section 6-132 of the New York City Administrative Code.

WHISTLEBLOWER PROTECTION EXPANSION ACT RIDER

1. In accordance with Local Law Nos. 30-2012 and 33-2012, codified at sections 6-132 and 12-113 of the New York City Administrative Code, respectively,

   (a) 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 (i) the Commissioner of the Department of Investigation, (ii) a member of the New York City Council, the Public Advocate, or the Comptroller, or (iii) the City Chief Procurement Officer, ACCO, Agency head, or Commissioner.

   (b) If any of Contractor's officers or employees believes that he or she has been the subject of an adverse personnel action in violation of subparagraph (a) of paragraph 1 of this rider, he or she shall be entitled to bring a cause of action against Contractor to recover all relief necessary to make him or her whole. Such relief may include but is not limited to: (i) an injunction to restrain continued retaliation, (ii) reinstatement to the position such employee would have had but for the retaliation or to an equivalent position, (iii) reinstatement of full fringe benefits and seniority rights, (iv) payment of two times back pay, plus interest, and (v) compensation for any special damages sustained as a result of the retaliation, including litigation costs and reasonable attorney's fees.

   (c) 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:

      (i) 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
      (ii) the rights and remedies afforded to its employees under New York City 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.

   (d) For the purposes of this rider, "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.

   (e) This rider is applicable to all of Contractor's subcontractors having subcontracts with a value in excess of $100,000; accordingly, Contractor shall include this rider in all subcontracts with a value a value in excess of $100,000.

2. Paragraph 1 is not applicable to this Contract if it is valued at $100,000 or less. Subparagraphs (a), (b), (d), and (e) of paragraph 1 are not applicable to this Contract if it was solicited pursuant to a finding of an emergency. Subparagraph (c) of paragraph 1 is neither applicable to this Contract if it was solicited prior to October 18, 2012 nor if it is a renewal of a contract executed prior to October 18, 2012.

NOTICE TO BIDDERS

Please be advised that the City of New York has revised the form of the performance bond that is required for City construction contracts that do not exceed $5 million. The form of bond required for contracts that are greater than $5 million has not changed. The City now has two approved forms. One form is to be used for contracts that do not exceed $5 million and one form is to be used for contracts above $5 million. The City's payment bond remains unchanged.

The new bond form for contracts that do not exceed $5 million has been approved by the U.S. Small Business Administration ("SBA") for participation in their Bond Guarantee Program. The SBA's Bond Guarantee Program enables eligible small businesses to obtain or increase bonding by having the SBA act as a partial guarantor of the contractor to the surety. If you are interested in participating in this program, we suggest that you contact your broker or the SBA.

In order to maximize participation by small businesses in the SBA Guarantee Program, the City also encourages prime contractors who are awarded contracts greater than $5 million to allow their subcontractors to use the SBA-approved form, particularly on contracts that are subject to Local Law 129 (the M/WBE program), if the prime contractor requires subcontractors to obtain performance bonds.

Notice to Bidders:

In 2013 the City will be implementing a new web based subcontractor reporting system. Once this subcontractor reporting system is implemented, and Contractor receives notice of its implementation, Contractor will be required to list in the system all of the subcontractors that it knows it will use or is already using in the performance of this contract. For each subcontractor listed, Contractor will be required to provide the following information: maximum contract value, description of subcontractor work, start and end date of the subcontract and identification of the subcontractor's industry. Identification of subcontractors in the system along with the required information will be required in order to obtain subcontractor approval under [section 3.02 of Appendix A][Article 17 of the Standard Construction Contract] and PPB Rule § 4-13 for all subcontractors that have not been approved as of the implementation date. 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...

When the subcontractor reporting system is implemented, Contractor will receive a written notice from the City which will contain the information the Contractor will need to list its subcontractors and report payments. Contractor will not be required to comply with the requirements set forth herein until such notice is issued. Contractor will have 30 days from the date of the notice to list its current subcontractors for which it has already received Agency approval, if any. Thereafter, for those subcontractors that have not yet been approved by the Agency, subcontractors will have to be listed in the system in order to obtain the required Agency approval.

Failure of the Contractor to list a subcontractor and/or to report subcontractor payments in a timely fashion may result in the Agency declaring the Contractor in default of the Contract and may 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. For construction contracts, the provisions of Article 15 of the Standard Construction Contract shall govern the issue of liquidated damages.

Contractor hereby agrees to these provisions and acknowledges that they will become effective on the date set forth in the notice.

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CITY OF NEW YORK

DEPARTMENT OF
DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

INFORMATION FOR BIDDERS

DELAY DAMAGES PILOT

September 2008

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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 pr 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 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 its 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

DELAY DAMAGES PILOT

September 2008

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CITY OF NEW YORK
STANDARD CONSTRUCTION CONTRACT

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CHAPTER XI (CONT'D)
MISCELLANEOUS PROVISIONS

CITY OF NEW YORK

STANDARD CONSTRUCTION CONTRACT (September 2008)

The Standard Construction Contract dated September 2008 (the "Contract") is amended as set forth below.

- Article 77: Article 77, Part A, Section 5 is deleted in its entirety and replaced with the following:

  5. Where a Subcontractor 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. **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 a contract that is subject to a Project Labor Agreement] where the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades [i.e., 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 of the Wicks trades, regardless of what point in the life of the contract such subcontracts will occur, at the time of bid submission.** In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

- Article 77: Article 77, Part A, Section 11 is deleted in its entirety and replaced with the following:

  11. Modification of Subcontractor Utilization Plan. A Contractor may request a modification of its Subcontractor Utilization Plan (**Subcontractor Participation Goals**) 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 a contract that is subject to a Project Labor Agreement] where the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades [i.e., 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 Subcontractor Utilization Plan as part of its bid submission.** The Agency may grant a request for Modification of a Contractor's Subcontractor 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 **Subcontractor Participation Goals**. In making such determination, Agency shall consider evidence of the following efforts, as applicable, along with any other relevant factors:

Sub-paragraphs (a) through (h) remain unchanged.

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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 content 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 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.

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 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.

2.1.4 **"City"** shall mean the City of New York.

2.1.5 **"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.

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

2.1.7 **"Comptroller"** shall mean the Comptroller of the City of New York.

2.1.8 **"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.

2.1.9 **"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.

2.1.10 **"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.

2.1.11 **"Contractor"** shall mean the entity which executed this Contract, whether a corporation, firm, partnership, joint venture, individual, or any combination thereof, and it(s), 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.

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

2.1.13 **"Engineer"** or **"Architect"** or **"Project Manager"** shall mean the person so designated in writing by the Commissioner to act as such in relation to this Contract, including a private Architect or Engineer or Project Manager, as the case may be.

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

2.1.15 **"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.

2.1.16 **"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.

2.1.17 **"Final Acceptance"** shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to the Contractor.

2.1.18 **"Final Approved Punch List"** shall mean a list, approved in writing by the Engineer, specifying those items of Work to be completed by the Contractor after Substantial Completion and dates for the completion of each item of Work.

2.1.19 **"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.

2.1.20 **"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.

2.1.21 **"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.

2.1.22 **"Other Contractor(s)"** shall mean any Contractor (other than the entity which executed this Contract or its Subcontractors) who has a contract with the City for work on or adjacent to the building or site of the Work.

2.1.23 **"Payroll Taxes"** shall mean State Unemployment Insurance ("SUI"), Federal Unemployment Insurance (FUI") and payments pursuant to the Federal Insurance Contributions Act ("FICA").

2.1.24 **"Project"** shall mean the public improvement to which this Contract relates.

2.1.25 **"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.

2.1.26 **"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.

2.1.27 **"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.

2.1.28 **"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.

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

2.1.30 **"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, at the site. Wherever the word Subcontractor appears, it shall also mean Sub-Subcontractor.

2.1.31 **"Substantial Completion"** shall mean the written determination by the Commissioner that the Work required under this Contract is substantially, but not entirely, complete.

2.1.32 **"Treasurer"** shall mean the Commissioner of the Department of Finance of the City of New York.

2.1.33 **"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 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 Department of Environmental Protection.

5.3.2 The Contractor agrees to comply with Section 24-219 of the Administrative Code of the **City** ("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 work 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 New York City Department of Environmental Protection. In addition, the Contractor's certified Construction Noise Mitigation Plan is subject inspection by the Department of Environmental Protection in accordance with 15 RCNY §28-101. No Contract work may take place at a worksite 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 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 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.

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 to fulfill the requirements of this Article 5.4.2, where the Commissioner of the New York 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 City agencies and Contractors. Any such determination shall expire after six months unless renewed.

5.4.2(c) Contractors shall not be required to comply with this Article 5.4.2 where the 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 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 is available. Any finding made pursuant to this subdivision shall expire after sixty days, at which time the requirements of this Article 5.4.2 shall be in full force and effect unless the 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 Agency issuing this solicitation.

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 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 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 calendar 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)(1) Where the 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 those paragraphs is unavailable for such vehicle, Contractor shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle.

5.4.3(d)(2) 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, 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)(3) In determining which technology to use for the purposes of Articles 5.4.3(d)(1) and 5.4.3(d)(2) above, 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)(4) Contractors 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 Agency issuing the solicitation. Any finding or waiver made or issued pursuant to Articles 5.4.3(d)(1) and 5.4.3(d)(2) above shall expire after one hundred eighty days, at which time the requirements of Article 5.4.3(a) shall be in full force and effect unless the 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. Contractors 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) 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 and ten thousand 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 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 Department the following information:

5.4.6(1) The total number of diesel-powered Nonroad Vehicles used to fulfill the requirements of this Public Works Contract;

5.4.6(2) The number of such Nonroad Vehicles that were powered by Ultra Low Sulfur Diesel Fuel;

5.4.6(3) 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(4) 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(5) The locations where such Nonroad Vehicles were used; and

5.4.6(6) 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.

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 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 of New York 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 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 terms shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five horsepower 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.

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 horsepower (HP) rating of 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.

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 the persons and 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 notify in writing the commercial general liability insurance carrier, and, where applicable, the worker's compensation and/or other insurance carrier, of any such loss, damage, injury, or accident, and any claim or suit arising therefrom, immediately, but not later than 20 days after such event. The **Contractor's** notice to the commercial general liability insurance carrier must expressly specify that "this notice is being given on behalf of the City of New York as Additional Insured as well as [the Contractor] as Named Insured." The Contractor's notice to the insurance carrier shall contain the following information: the name of the **Contractor**, the number of the **Contract**, the date of the occurrence, the location (street address and borough) of the occurrence, and the identity of the persons or things injured, damaged or lost.

7.3.2(a) At the time notice is provided to the insurance carrier(s), the **Contractor** shall provide copies of such notice to the **Comptroller** and the **Commissioner**. Notice to the **Comptroller** shall be sent to the Insurance Unit, NYC Comptroller's Office, 1 Centre Street – Room 1222, New York, New York, 10007. Notice to the **Commissioner** shall be sent to the address set forth in Schedule A of the General Conditions.

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 indemnify, defend and hold the **City**, its employees and agents (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 **Contractor** waives all rights against the **City** for any damages or losses for which either is covered under any insurance required under Article 22 (whether or not such insurance is actually procured) or any other insurance applicable to the operations of the **Contractor** and/or its **Subcontractors** in the performance of this **Contract.**

7.6 The provisions of this Article 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 **Work** on the date specified in a written notice signed by the **Commissioner.** The time for performance of the **Work** under the **Contract** shall be computed from the date specified in such written notice. **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 herein, 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 with this **Contract,** unless otherwise directed by the **Engineer,** shall submit to the **Engineer** a proposed progress schedule 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;** 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** 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 enable 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, 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 Section 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 fully 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.

11.1.3 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.

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 City 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 work for a period exceeding thirty days, that was not brought about through any action or omission of the **Contractor.**

11.4.1.5 Differing site conditions that were not known or 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 The provisions of this Article 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 section shall be allowed.

11.5 Non-Compensable Delays. The **Contractor** agrees to make no monetary request for, and has 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 or similar situation;

11.5.5 Any shortages of supplies of materials 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 war or of the public enemy or terrorist acts;

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 dates of the claimed periods of delay and, in addition, a description of the operations that were delayed, the reasons for the delay and an explanation of how they were delayed.

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 section 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 Labor;

11.7.1.2 Materials;

11.7.1.3 Equipment;

11.7.1.4 Extended Field Office Costs;
11.7.1.5 Extended Contract Site Overhead;
11.7.1.6 Extended Home office overhead; and
11.7.1.7 Insurance and Bond Costs.

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 11.7.1.1 through 11.7.1.6, and an additional overhead of 5% of the costs outlined in 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 that a compensable delay has occurred and agree on the amount of compensation, payment may be made pursuant to a written change order, subject to pre-audit by the **Engineering Audit Officer,** and may be post-audited by the **Comptroller** and/or the **Department.**

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** shall determine 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. Except as provided for in Article 11.4.1.1, the **Contractor** agrees to make no claim against the **City** for

any damages relating to or arising out of any timely directions issued by the **Engineer** pursuant to this article (including but not limited to the failure of any **Other Contractor** to comply or promptly comply with such 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 this **Contractor's** failure to comply with the **Engineer's** direction 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 **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 suit based upon such claim and if any judgment or claims (even if the allegations of the suit 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 and the **PPB** Rules.

13.2 Any extension of time may be granted only by the **Commissioner** 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 officers, 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 **Commissioner** 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 **Commissioner** 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 **Commissioner** or the Board on an application for an extension of time shall be binding and conclusive on the **Contractor**.

13.6 The granting of an application for an extension of time for causes of delay other than those herein referred to shall be entirely within the discretion of the **Commissioner** or the Board.

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 **Commissioner** of the condition which allegedly has caused or is causing the delay, and shall submit a written application to the **Commissioner** 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 bid amount;

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 **Commissioner** 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 **Commissioner** 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 **Commissioner** 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 **Commissioner**, 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 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** except as set forth in Article 11, and agrees that all it may be entitled to on account of any such delay for which compensation is not specifically provided for in Article 11 is an extension of time to complete performance of the **Work** as provided herein.

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 in Articles 14.2.1 and 14.2.2 have been met. The **Commissioner** will then issue a Certificate of **Substantial Completion.**

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 Punch List and Date for **Final Acceptance**: Following inspection of the **Work**, the **Engineer** shall furnish the **Contractor** a final punch list, specifying all items of **Work** to be completed. The **Contractor** shall then submit to the **Engineer** dates for the completion of each specified item of **Work**. 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, shall establish dates for the completion of each item of **Work**. The latest completion date specified shall be the date for **Final Acceptance** of the **Work**.

14.3 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**.

14.4 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.

14.5 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.

14.6 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 complete the **Work** within the time fixed for such 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 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 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 shall apply to the **Contractor** if it 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 this article. In the event the **Commissioner** takes over, uses, occupies, or operates any part of the **Work**:

16.1.1 the **Commissioner** 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, 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 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.

17.4 The **Commissioner** will notify the **Contractor** in writing whether the proposed **Subcontractor** is qualified or not qualified. If the proposed **Subcontractor** is not qualified, the **Contractor** may submit another proposed **Subcontractor** unless the **Contractor** decides to do the **Work**. No **Subcontractor** shall be permitted on the **Site** unless approved.

17.5 Before entering into any subcontract hereunder, the **Contractor** shall inform the **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**.

17.6 Documents given to a **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.

17.7 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.

17.8 The **Contractor** shall be responsible for ensuring that all **Subcontractors** performing **Work** at the **Site** have either their own insurance coverage or are covered by the **Contractor's** insurance as required by Article 22.

17.9 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:

17.9.1 Payment to **Subcontractors**: The agreement between the **Contractor** and its **Subcontractors** 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**.

17.9.2 Prevailing Rate of Wages: The agreement between the **Contractor** and its **Subcontractors** shall include the prevailing wage rates and supplemental benefits to be paid in accordance with Labor Law Section 220.

17.9.3 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 its **Subcontractors** in excess of $50,000 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.).

17.10 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 adjusted.

17.11 On **Contracts** where 100% 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.

17.12 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, or conveyance shall not be valid until filed in the office of the **Commissioner** and the **Treasurer**, 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 or conveyance, 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 GUARANTY

ARTICLE 19. SECURITY DEPOSIT

19.1 The bid deposit, if required, shall be retained by the **Comptroller** as security for the **Contractor's** faithful performance of the **Contract** and will be returned to the **Contractor** only after the sum retained under Article 21 equals the amount of the bid deposit, subject to the other provisions of this **Contract.** If performance and payment bonds are required, any bid security posted shall be returned within a reasonable time after posting of such bonds and execution of this **Contract** by the **City.** When no partial payments are provided, the bid deposit will be released when final payment is certified to the **Comptroller** for payment.

19.2 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:**

19.2.1 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

19.2.2 To indemnify the **City** against any and all claims.

ARTICLE 20. PAYMENT GUARANTEE

20.1 On **Contracts** where 100% performance bonds and payment bonds are executed, this article does not apply.

20.2 In the event the terms of this **Contract** do not require the **Contractor** to provide a payment bond, the **City** shall, in accordance with the terms of this article, guarantee payment of all lawful demands 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 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 this Article 20.3.

20.3.2 Nothing in this article 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.**

20.3.3 All demands made against the **City** pursuant to this article shall be made within four (4) months from the date payment is due on the invoice or invoices submitted by the beneficiary to the **Contractor** for labor or **Work** done or for materials or supplies delivered, or, if the demand is for wages, four (4) months from the date the wages were due to be paid to the beneficiary.

20.3.4 All demands made against the **City** by such beneficiary shall be presented to the **Engineer** along with all written documentation concerning the demand which the **Engineer** deems 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.

20.3.5 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.

20.3.6 The **City** will not initiate the payment process of this article or make payment on a demand where the beneficiary making the demand has filed a lien against the **Work** or otherwise sues the **City** prior to receiving a written notice from the **City** that it will not pay the demand.

20.3.7 No beneficiary shall be entitled to interest from the **City**, or to any other costs, including, but not limited to, attorney's fees.

20.4 Upon the receipt by the **City** of a demand pursuant to this article, 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.

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.**

20.4.2 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 lien has been filed, the terms and conditions set forth in Article 23 shall apply.

20.5 The provisions of this article 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, 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 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 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 his **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 within the one year limitations period set forth in Section 137(4)(b).

ARTICLE 21. RETAINED PERCENTAGE

21.1 If this **Contract** requires 100% 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 100% performance and payment security and if the price for which this **Contract** was awarded does not exceed $500,000, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and retain until the substantial completion of the **Work**, ten (10%) percent of the value of **Work** certified for payment in each partial payment voucher.

21.3 If this **Contract** does not require 100% performance and payment security and if the price for which this **Contract** was awarded exceeds $500,000, 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: 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**), the **Contractor** shall effect 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 issued by companies that meet the standards of Article 22.2.1 and shall be primary (and non-contributing) to any insurance or self-insurance maintained by the **City.**

22.1.1 Commercial General Liability Insurance: The **Contractor** shall provide a Commercial General Liability Insurance policy covering the **Contractor** as Named Insured and the **City** as an Additional Insured. This policy shall protect the **City** and the **Contractor** from claims for property damage and/or bodily injury, including death, which may arise from any of the operations under this **Contract**. Coverage under this policy shall be at least as broad as that provided by ISO Form CG 0001 (10/01 ed.), must be "occurrence" based rather than "claims-made", and shall 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, Medical Payments, Independent Contractors, Personal Injury (Contractual Exclusion deleted), Explosion, Collapse and Underground Property, and Incidental Malpractice. If such insurance contains an aggregate limit, it shall apply separately to this **Project.**

22.1.1(a) Such Commercial General Liability Insurance shall name the City, together with its officials and employees, as an Additional Insured under this policy. Coverage for the City as Additional Insured shall specifically include the City's officials and employees, and shall be at least as broad as either Insurance Services Office ("ISO") Form CG 20 10 (07/04 ed.) or Form CG 20 33 (07/04 ed.) and shall provide completed operations coverage at least as broad as CG 20 37 (07/04 ed.).

22.1.1(b) If this **Contract** is equal to or greater than Ten Million Dollars ($10,000,000.00), each Commercial General Liability Insurance policy provided shall contain each of the following endorsements:

22.1.1(b)(i) The Duties in the Event of Occurrence, Claim or Suit condition of the policy is amended per the following: If and insofar as knowledge of an "occurrence", "claim", or "suit" is relevant to the City of New York as Additional Insured under this policy, such knowledge by an agent, servant, official, or employee of the City of New York will not be considered knowledge on the part of the City of New York of the "occurrence", "claim", or "suit" unless the following position shall have received notice thereof from such agent, servant, official, or employee: Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department; and

22.1.1(b)(ii) Any notice, demand or other writing by or on behalf of the Named Insured to the Insurance Company shall also be deemed to be a notice, demand, or other writing on behalf of the City as Additional Insured. Any response by the Insurance Company to such notice, demand or other writing shall be addressed to Named Insured and to the City at the following addresses: Insurance Unit, NYC Comptroller's Office, 1 Centre Street – Room 1222, New York, N.Y. 10007; and Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, NY 10007.

22.1.2 Workers' Compensation Insurance and Disability Benefits Insurance: The **Contractor** shall provide, and ensure that each **Subcontractor** provides, Workers Compensation 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 qualifying for insurance pursuant to Article 22.1.4).

22.1.3 Employers' Liability Insurance: The **Contractor** shall provide, and ensure that each **Subcontractor** provides, Employers Liability Insurance affording compensation due to bodily injury by accident or disease sustained by any employee arising out of and in the course of his/her employment under this Contract (except for those qualifying for insurance pursuant to Article 22.1.4).

22.1.4 United States Longshoremen's and Harbor Workers Act and/or Jones Act Insurance: The **Contractor** shall provide, and ensure that each **Subcontractor** provides, 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**.

22.1.5 Builders' Risk Insurance: The **Contractor** shall provide a Builders' Risk Insurance policy covering all risks in completed value form. Such policy shall cover the total value of the **Work** performed in accordance with Schedule A, as well as the value of any equipment, supplies and/or material for the **Project** that may be in storage (on or off the **Site**) or in transit. The policy shall cover the cost of removing debris, including demolition as may be legally necessary by the operation of any law, ordinance or regulation, and for loss or damage to any owned, borrowed, leased or rented capital equipment, tools, including tools of their agents and employees, staging towers and forms,

and property of the **City** held in their care, custody and/or control. Such policy shall name as insureds the **City**, the **Contractor,** and its **Subcontractors**. The Builders' Risk policy shall contain the following endorsements:

22.1.5(a) The **City** and the **Contractor** shall be named as loss payee for the **Work** in order of precedence, as their interest may appear; and

22.1.5(b) In the event the loss occurs at an occupied facility, the policy shall permit occupancy without the consent of the Insurance Company; and

22.1.5(c) In the event that the insurance policy has been issued by a mutual insurance company, the following language shall be included: "The City of New York is not liable for any premium or assessment under this policy of insurance. The First Named Insured is solely liable therefor."

22.1.6 Comprehensive Business Automobile Liability Insurance: The **Contractor** shall provide a Comprehensive Business Automobile Liability policy for liability arising out of any owned, non-owned, leased and hired vehicles to be used in connection with this **Contract**. Coverage should be at least as broad as ISO Form CA0001, ed. 10/01.

22.1.6(a) If autos 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.

22.1.7 Pollution/Environmental Liability Insurance: The **Contractor** shall provide Pollution/Environmental Liability Insurance covering bodily injury and property damage, including loss of use of damaged property or of property that has not been physically injured. 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, suit, or proceedings against the **City** arising from the operations under this **Contract**. Such insurance shall be in the **Contractor's** name and list the **City** as an Additional Insured. Coverage for the **City** as Additional Insured shall specifically include the **City's** officials and employees, and shall be at least as broad as provided to the **Contractor** for this **Project**.

22.1.7(a) If such coverage 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 years from the time the **Work** under this **Contract** is completed.

22.1.8 Marine Insurance:

22.1.8(a) Marine Protection and Indemnity Insurance: The **Contractor** shall provide a Marine Protection and Indemnity policy with coverage at least as broad as policy form SP-23. The policy shall provide coverage for the **Contractor** and for the **City** (together with its officials and employees) as Additional Insured for bodily injury and property damage arising from marine operations under this **Contract** including injury or death of crew members (if not fully provided through other insurance), damage to piers, wharves and other fixed or movable structures and loss of or damage to any other vessel or craft, or to property on such other vessel or craft, not caused by collision.

22.1.8(b) Ship Repairers Legal Liability Insurance: The **Contractor** shall provide a Ship Repairers Legal Liability Insurance policy covering all repair operations under this **Contract** at

or in the vicinity of a designated approved port or yard under this **Contract**. The policy shall provide coverage from the point of acceptance of care custody and control of any **City** vessel. The policy shall provide Bailee Coverage for any **City** vessel in the **Contractor's** care, custody and control and coverage for damage to property of others caused by any **City** vessel in the **Contractor's** care custody and control.

22.1.8(c) Collision Liability/Towers Liability Insurance: The **Contractor** shall provide a Collision Liability/Towers Liability Insurance policy with coverage for the **Contractor** and for the **City** (together with its officials and employees) as Additional Insured at least as broad as the American Institute Tug Form (08/01/76) for all tugs used under this **Contract** and Collision Liability per American Institute Hull Clauses (6/2/77).

22.1.8(d) Marine Pollution Liability Insurance: The **Contractor** shall provide a Marine Pollution Liability Insurance policy covering itself as Named Insured and the **City** (together with its officials and employees) as Additional Insured for 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. Coverage under this policy shall be at least as broad as that provided by Water Quality Insurance Syndicate Form (09/98 ed.).

22.1.9 The **Contractor** shall provide such other types of insurance, at such minimum limits, as are specified in Schedule A of the General Conditions.

22.2 General Requirements for Insurance 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 AA, unless prior written approval is obtained from the Mayor's Office of Operations.

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 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 All required insurance policies, except for insurance required pursuant to Sections 22.1.2, 22.1.3, and 22.1.4, shall contain the following endorsement: "This policy may not be cancelled, terminated, modified or changed unless thirty (30) days prior written notice is sent by the Insurance Company to the Named Insured (or First Named Insured, as appropriate), the **Commissioner**, and to the **Comptroller**, attn: Office of Contract Administration, Municipal Building, Room 1005, New York, New York 10007."

22.3 Proof of Insurance:

22.3.1 Within ten (10) **Days** of award, the **Contractor** shall, for each policy required under this **Contract,** except for Workers Compensation Insurance and Disability Benefits Insurance and builders' risk insurance, file a Certificate of Insurance with the **Commissioner** pursuant to Article 22.6. For Workers' Compensation Insurance and Disability Benefits Insurance, the **Contractor** shall file proof of insurance in a form acceptable to the **Commissioner** within ten (10) **Days** of award. Accord forms are not acceptable proof of workers' compensation coverage. The Contractor must submit one of the following forms to the Department, or another form acceptable to the Department: C-105.2 -- Certificate of Workers' Compensation Insurance, or U-26.3 -- State Insurance Fund Certificate of Workers' Compensation Insurance. For builders' risk insurance, the **Contractor** shall file a Certificate of Insurance with the **Commissioner** at the direction of the **Commissioner** but in any event no later than ten (10) **Days** prior to commencement of the **Work.**

22.3.1(a) All Certificates of Insurance shall be in a form acceptable to the **City** and shall certify the issuance and effectiveness of the types of insurance specified in Schedule A, each with the specified minimum limits and evidence of the compliance with the Additional Insured or Named Insured provisions of Articles 22.1.1(a), 22.1.5, 22.1.7, and 22.1.8, as applicable. All Certificate(s) of Insurance shall be accompanied by either a duly executed "Certification by Broker" in the form contained in Part II of Schedule A or completed copies of all policies referenced in the Certificate of Insurance. In the absence of completed policies, binders are acceptable.

22.3.2 Certificates of Insurance confirming renewals of insurance shall be submitted to the **Commissioner** prior to the expiration date of coverage of policies required under this **Contract.** Such Certificates of Insurance shall comply with the requirements of Article 22.3.1(a) and, if applicable, Article 22.3.1(b).

22.3.3 The **Contractor** shall be obligated to provide the **City** with a copy of any policy required by this Article 22 upon the demand for such policy by the **Commissioner** or the New York City Law Department.

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 hereunder does not excuse the **Contractor** from securing a policy consistent with all provisions of this Article 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.

22.5 The **City** as Additional Insured or Loss Payee under **Subcontractors'** Insurance. The Contractor shall ensure that each **Subcontractor** name the **City** as Additional Insured or loss payee, as appropriate, under all

policies covering **Work** performed by such **Subcontractor** under this **Contract**. The **City**'s coverage as Additional Insured shall include the **City's** officials and employees and be at least as broad as that provided to the **Contractor**. The foregoing requirements shall not apply to insurance provided pursuant to Articles 22.1.2, 22.1.3, and 22.1.4.

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 If the **Contract** involves disposal of hazardous materials, the **Contractor** shall dispose such materials only at sites where the disposal site operator maintains Pollution Legal Liability Insurance in the amount of at least $2,000,000 for losses arising from such disposal site.

22.8 Materiality/Non-Waiver: The **Contractor's** failure to secure policy(ies) in complete conformity with this Article, or to give the Insurance Company timely notice of any sort required in this **Contract** on behalf of the **City**, or to do anything else required by this Article 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.

22.9 Other Remedies: Insurance coverage in the minimum amounts provided for herein shall not relieve the **Contractor** or **Subcontractors** of any liability under this **Contract**, nor shall it preclude the **City** from exercising any rights or taking such other actions as are 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, and return the balance, if any, without interest, to the **Contractor**.

23.3 Liens: If at any time before or within thirty (30) **Days** after the **Work** is completed and accepted by the **City**, any persons claiming to have performed any labor or furnished any material toward the performance or completion of this **Contract**, shall file with the **Agency** and with the **Treasurer** any notice as is described in the

New York State Lien **Law**, or any act of the Legislature of the State of New York, the **City** shall retain, from the monies due or to become due under this **Contract**, so much of such monies as shall be sufficient to pay the amount claimed in said notice, together with the reasonable costs of any action or actions brought or that may be brought to enforce such lien. The monies so retained shall be held by the **City** until the lien thereon created by the said act and the filing of the said notice shall be discharged pursuant to **Law**.

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 guarantee are provided for.

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 or lessees of the premises.

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 **Laws** 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 **Department.**

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 a time and material basis 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 on a time and material basis 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.

26.2.1 Necessary materials (including transportation to the **Site**); plus

26.2.2 Necessary direct labor, including payroll taxes 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, 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) x (HP rating) x (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 PRIMEDIA (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 PRIMEDIA (the "Blue Book"). The reasonable rental value is 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 percent of such rental rates; second shift shall be sixty percent of the first shift rate; and third shift shall be forty percent of the first shift rate. Equipment on standby shall be reimbursed at one-third the prorated monthly rental rate. **Contractor**-owned equipment includes equipment from rental companies affiliated with or controlled by the **Contractor,** as determined by the **Commissioner**. In establishing cost reimbursement for non-operating contractor-owned 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 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 Reasonable rental costs of non-**Contractor**-owned 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) x (HP rating) x (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

26.2.7 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 shall be based upon the Manual Rate for such insurance for the applicable work classifications/codes, in accordance with the most recent schedule promulgated by the New York Compensation Insurance Rating Board; plus

26.2.8 Additional costs incurred as a result of the **Extra Work** for performance and payment bonds; plus

26.2.9 Ten (10%) 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

26.2.10 Ten (10%) percent of the total of items in Articles 26.2.1 through 26.2.5, plus item 26.2.9, 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

26.2.11 Five (5%) percent of the total of items in Article 26.2.6, 26.2.7, and 26.2.8 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**. The cost of such **Extra Work** and of such omitted or reduced **Work** shall be computed based upon applicable **Contract** unit prices. Where there are no applicable **Contract** unit prices, the cost of such **Extra Work** and of such omitted or reduced **Contract Work** shall be computed in accordance with items 26.2.1 through 26.2.8. If the cost of such **Extra Work** exceeds the costs of such omitted or reduced **Contract Work,** the **Contract** price shall be increased by the difference, plus percentages for overhead and profit as provided in Articles 26.2.9 through 26.2.11. If the cost of the omitted or reduced **Contract Work** exceeds the cost of the **Extra Work,** then the **Contract** price shall be reduced by the difference.

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 that arise under, or by virtue of, this **Contract** shall be finally resolved in accordance with the provisions of this article 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 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 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 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 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, 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 disputed 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 **Contractor** thus brought into the dispute resolution proceeding shall have the same rights and obligations under this article 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** 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. 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 **Agency** 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 section 7-201 and 7-203 of the New York City 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 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 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;

27.6.1.1 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

27.6.2 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, 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 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 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 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 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 Corporation Counsel, the Director of the Office of Construction, 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 Laws 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.

27.8 Any termination, cancellation, or alleged breach of the **Contract** prior to or during the pendency of any proceedings pursuant to this article 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.

ARTICLE 28. RECORD KEEPING FOR EXTRA OR DISPUTED WORK

28.1 While the **Contractor** or any of its **Subcontractors** is performing **Extra Work** on a Time and Material Basis ordered by the **Commissioner** under Article 25, or is performing disputed **Work**, or complying with a determination or order under protest in accordance with Articles 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 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** 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 fully 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.

30.2 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, 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, 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, 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** or **Comptroller** 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** or **Comptroller** 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.

30.5 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 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** 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**, officer, 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 **Resident Engineer**, or any other officer, 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 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 hours in duration.

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.

36.1.5 The aforesaid provisions of this article covering every **Contract** for or on behalf of the State or a municipality for the manufacture, sale or distribution of materials, equipment or supplies shall be limited to operations performed within the territorial limits of the State of New York.

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 section 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 all information and reports including an Employment Report before the award of the **Contract** which are required by E.O. 50, the Rules and Regulations promulgated thereunder, and orders of the 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.

Failure to comply with E.O. 50 and the rules and regulations promulgated thereunder, in one or more instances, may result in the **Agency** declaring the **Contractor** to be non-responsible.

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 VIII of the Administrative Code;

36.5.2 every agreement between the **Contractor** and its **Subcontractors** in excess of $50,000 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.); and

36.5.3 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 Section 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) calendar **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**. Minimum wages shall be the rates fixed by Federal **Law** and regulations.

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.

37.4 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 wage scale as provided in Labor Law Section 220, as amended, or

37.4.1(b) Less than 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) and Minimum Wages (Article 37.2.6), the party responsible therefore 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 suits brought by the Corporation Counsel in the name of the **City**, in addition to damage for any other breach of this **Contract**, 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 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 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, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public work projects are rendered simultaneously, such **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public work 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 work 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 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 work 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 dollars, such notice shall also include a statement that, that each worker, laborer or mechanic 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 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, which signed statement shall be maintained with the payroll records required by this **Contract**; and

37.6.3.1 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: Provide laminated identification badges which indicate the worker's, laborer's or mechanic's name, trade, employer's name and employment starting date (month/day/year). Further, 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**; 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 in Article 37.6.1 in that language or languages as may be required. The **Contractor** is responsible for all distributions under 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 If this **Contract** is for an amount greater than $1,000,000, 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 $750,000, 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** or **Subcontractor(s)** 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.**

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 with the provisions of this article 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 for 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** shall maintain on the **Site** the original payrolls or transcripts thereof which the **Contractor** and its **Subcontractor(s)** are required to maintain pursuant to Labor **Law** Section 220. The **Contractor** and **Subcontractor(s)** shall submit original payrolls or transcripts, subscribed and affirmed by it as true, with each and every payment requisition. 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 original payrolls or transcripts thereof, subscribed and affirmed by it as true, and the statements signed by each worker pursuant to this Chapter VIII. In addition, the **Contractor** and **Subcontractor(s)** shall furnish to the **Engineer** upon written demand any other information to satisfy the **Engineer** that this Chapter VIII and the Labor **Law**, as to the hours of employment and rates of wages, are being observed. The **Contractor** shall maintain the payrolls or transcripts thereof for six (6) years from the date of completion of the **Work** on this **Contract.**

38.2 When directed by the **Engineer**, the **Contractor** or **Subcontractor** shall provide the **Engineer** with an attendance sheet for each **Day** on which **Work** is performed on the **Site.** Such attendance sheet shall be in a form acceptable to the **Agency** and shall provide information for employees of the **Contractor** and **Subcontractor(s).**

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** void.

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 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, 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 a month, 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 such satisfactory payment application, 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 **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 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 section 43.5 herein, then the **Contractor** shall pay interest on amounts due to such **Subcontractor** or **Materialman** at a 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 NY General Business Law. Accrual of interest shall commence on the day immediately following the expiration of the seventh day following receipt of payment to the **Contractor** by 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 suppliers 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 When the **Work** in the opinion of the **Commissioner**, has been substantially but not entirely completed, he/she shall issue a certificate of **Substantial Completion**.

44.2 The **Contractor** shall submit with the **Substantial Completion** requisition:

44.2.1 A Final Verified Statement of any and all alleged claims against the **City** and any pending dispute resolution procedures in accord with the **PPB** Rules and this **Contract**, 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.

44.2.1(a) With respect to each such claim, the **Commissioner**, the **Comptroller** and, in the event of litigation, the Corporation Counsel of the **City** 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 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, will have waived any such claims.

44.2.2 A **Final Approved Punch List**.

44.2.3 Where required, a request for a substantial or final extension of time.

44.3 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 where the **Contractor** shall fail 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.

44.4 No further partial payments shall be made to the **Contractor** after the **Commissioner** issues a Certificate of **Substantial Completion**, except the **Substantial Completion** payment and **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.

44.5 The **Contractor** acknowledges that nothing contained in this article 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. 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 and all alleged claims against the **City**, and any pending dispute resolution procedures in accord with the **PPB** Rules and this **Contract**, 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 Corporation Counsel of the **City** 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, is entitled 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 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 to 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 officers, 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, or those for amounts deducted by the **Commissioner** from the final requisition or by the **Comptroller** 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 officer, 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 from commencing an action for breach of **Contract** under this provision to the extent permitted by **Law** and by the terms of the **Contract** 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 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 the 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.

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 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 a lawsuit 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 provision 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 complete 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 previous provisions of this Chapter X shall be in addition to any and all other legal or equitable remedies permissible in the premises.

54.3 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**.

54.4 The expense of such completion, 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**.

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 lawsuit, 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 lawsuit be instituted or maintained on any such claims unless such lawsuit is commenced within six (6) months after the date the **Commissioner** issues a Certificate of **Substantial Completion** pursuant to Article 44; except that:

56.2.1 Any claims arising out of events occurring after the date the **Commissioner** issues a Certificate of **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 becomes 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 lawsuit 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 indemnify the **City** against any and all claims and judgments for damages for any infringement of copyright and patents or use of patented articles, tools, materials, equipment, appliances or processes in the performance or completion of the **Work**, including all costs and expenses which the **City** shall or may incur or be obligated to pay by reason thereof.

ARTICLE 58. NO CLAIM AGAINST OFFICERS, AGENTS OR EMPLOYEES

58.1 No claim whatsoever shall be made by the **Contractor** against any officer, 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. SERVICES OF NOTICES

59.1 The **Contractor** hereby designates the business 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. Actual delivery of any such notice, direction or communication to the aforesaid place, or depositing it in a postpaid wrapper addressed thereto in any post office box (P.O. Box) regularly maintained by the United States Postal Service, shall be conclusively deemed to be sufficient service thereof upon the **Contractor** as the date of such delivery or deposit.

59.2 Such address 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, local taxes and Sales and Compensation Use Taxes of the State of New York and of cities and counties on all materials and supplies 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** or a **Subcontractor**, or to supplies and materials which even though they are consumed, are not incorporated into the completed **Work** (consumable supplies), and the **Contractor** and its **Subcontractors** shall be responsible for and pay any and all applicable taxes, including Sales and Compensation Use Taxes, on such leased tools, machinery, equipment or other property and upon all such unincorporated supplies and materials.

62.2 The **Contractor** agrees to sell and the **City** agrees to purchase all supplies and materials, other than consumable supplies, 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 supplies and materials shall be in full payment and consideration for the sale of such supplies and materials herein.

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, etc., 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** and labor.

62.3 The purchase by the **Contractor** of the supplies and materials sold hereunder shall be a purchase or procurement for resale and therefore not subject to the New York State or **City** Sales or Compensation Use Taxes or any such taxes of cities or counties. The sale of such supplies and materials by the **Contractor** to the **City** is exempt from the aforesaid sales or compensating use taxes. With respect to such supplies and materials, 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 supplies and materials, free of liens and/or encumbrances, and the **Contractor** shall mark or otherwise identify all such materials as the property of the **City**.

62.4 Title to all materials 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 supplies and materials to the **Site** and prior to its becoming a part of the permanent structure and/or construction. Notwithstanding such transfer of title, the **Contractor** shall have the full and continuing responsibility to install such materials and supplies in accordance with the provisions of this **Contract**, protect them, maintain them in a proper condition and forthwith repair, replace and make good any damage thereto, theft or disappearance thereof, and furnish additional materials 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 such supplies and materials are rejected as being defective or otherwise unsatisfactory, title to all such supplies and materials shall be deemed to have been transferred back to the **Contractor**.

62.5 The purchase by **Subcontractors** of supplies and materials to be sold hereunder shall also be a purchase or procurement for resale to the **Contractor** (either directly or through other **Subcontractors**) and therefore not subject to the aforesaid Sales or Compensation Use Taxes, provided that the subcontract agreements provide for the resale of such supplies and materials prior to and separate and apart from the incorporation of such supplies and materials into the permanent structure and/or construction and that such subcontract agreements are in a form similar to this **Contract** with respect to the separation of the sale of materials from the **Work** and labor, services, consumable supplies and any other matters to be provided, and provided further that the subcontract agreements provide separate prices for materials and all other services and matters. Such separation shall actually be followed in practice, including the separation of payments for supplies and materials from the payments for other **Work** and labor and other things to be provided.

62.6 The **Contractor** and its **Subcontractors** and Materialmen shall obtain any and all necessary **Contractor** Exempt Purchase Certificates or Resale Certificates from the appropriate governmental **Agency** or

Agencies, and furnish a **Contractor** Exempt Purchase Certificate or Resale Certificate to all persons, firms or corporations from which they purchase supplies and materials for the performance of the **Work** covered by this **Contract**.

62.7 In the event any of the provisions of this article shall be deemed to be in conflict with any other provisions of this **Contract** or create any ambiguity, then the provisions of this article 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 **Agreement**, 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 herein 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 herein 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 herein 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 herein 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, 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 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 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, less salvage value, 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:

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, whichever is less, 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 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 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.

64.2.2 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 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 Material Contracts or Items: On all **Contracts** or items in a **Contract** where time and material records are specified as the basis for payment of the **Work**, 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 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 Cost shall not include overhead.

64.3 In no event shall any payments under this article exceed the **Contract** price for such items.

64.4 All payments pursuant to this article 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, 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 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** of New York, State of New York, 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 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 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 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 United States 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 State of New York, upon request of the **City**, the **Contractor** shall either consent to a transfer of the action to a State Court of competent jurisdiction located in the **City** and State 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 State Court of competent jurisdiction in the **City**.

65.3 If any provision(s) of this article 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 Export Administration Act of 1979, as amended, or the regulations of the United States Department of Commerce 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, 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.

67.2 Unless specifically waived by the **Commissioner** with the approval of the Division of Economic and Financial Opportunity of the 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 enterprise ("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 prime **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 LBE's 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 **Contract**. Remedy for such breach of **Contract** may include the imposition of any or all of the following sanctions:

67.6.1 Reducing a **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 Where non-compliance is by an LBE, de-certifying and declaring the LBE 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 contraction 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** and rules, 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 asses, 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 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 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. HEALTH INSURANCE COVERAGE

70.1 If the price for which this **Contract** was awarded exceeds $100,000, or if the price for which this **Contract** was awarded when combined with other construction or services contracts awarded the **Contractor** by the **City** in the year prior to award of this **Contract** exceeds $100,000, the **Contractor**, following registration of the **Contract**, shall be required to submit responses to requests for information regarding the nature of any health insurance provided by the Contractor to its employees and their spouses and domestic partners, upon request of the **Agency** or other designated **City** agency.

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 2.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 10th day of APRIL 2014 before me personally came Malgorzata Stawczynska to me known, who, being by me duly sworn did depose and say that he resides at GREENWICH, CONNECTICUT that he is the OWNER 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

VICTORIA AYO-VAUGHAN
Notary Public, State of New York
Registration #01AY5014042
Qualified In Queens County
Commission Expires July 15, 2015

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

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: _____
Deputy Commissioner

CONTRACTOR: Adam's European Contracting, Inc

By: _____
(Member of Firm or Officer of Corporation)

Title: OWNER

(Where Contractor is a Corporation, add):
Attest:

_____
Secretary

(Seal)

_____

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) exercise 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) take any other appropriate remedy.

4. If a Subcontractor Utilization Plan has been submitted, and pursuant to this Article II, Section 3, the Contractor has been found to have failed to award subcontracts to MBEs and/or WBEs sufficient to meet the Subcontractor Participation Goals contained in its Subcontractor Utilization Plan or the Subcontractor 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 subcontracts required to be awarded to MBE and/or WBE subcontractors to meet the Subcontractor Participation Goals and the dollar amount the Contractor actually awarded and paid to MBE and/or WBE subcontractors. In view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of Contractor's failure to meet the Subcontractor 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 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), 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 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 Subcontractor Utilization Plan shall be a factor in the evaluation of its performance. Whenever a contracting agency determines that a contractor's compliance with a Subcontractor Utilization Plan has been unsatisfactory, the agency shall, after consultation with the city chief procurement officer, file an advice of caution form for inclusion in VENDEX as caution data.

PART B: MISCELLANEOUS

1. The Contractor shall take notice that, if this solicitation requires the establishment of a Subcontractor 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 Subcontractor Utilization Plan.

2. Pursuant to DSBS rules, construction contracts that include a requirement for a Subcontractor Utilization Plan shall not be subject to the law governing Locally Based Enterprises set forth in Administrative Code Section 6-108.1.

3. DSBS is available to assist contractors and potential contractors in determining the availability of MBEs and WBEs to participate as subcontractors, and in identifying opportunities that are appropriate for participation by MBEs and WBEs in contracts.

4. Prospective contractors are encouraged to enter into joint ventures with MBEs and WBEs.

5. By submitting a bid or proposal the Contractor hereby acknowledges its understanding of the M/WBE requirements set forth herein and the pertinent provisions of Local Law 129 of 2005, and any rules promulgated thereunder, and if awarded this Contract, the Contractor hereby agrees to comply with the M/WBE requirements of this Contract and pertinent provisions of Local Law 129 of 2005, 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 M/WBE's to meet the required **Subcontractor 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 Subcontractor Utilization Plan, Agency shall send a written notice to the Contractor describing the alleged noncompliance and offering 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 this Section 6-129, including, but not limited any Subcontractor 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) assess liquidated damages or reduction of fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the program established by Section 6-129, or in

9. Where a Subcontractor Utilization Plan has been submitted, and the Contractor requests a change order the value of which exceeds 10 percent of the Agreement, Agency shall establish participation goals for the work to be performed pursuant to the change order.

10. Pre-award waiver of **Target Subcontracting Percentage**. Agency may grant a full or partial waiver of the **Target Subcontracting Percentage** to a bidder or proposer, as applicable, who demonstrates—before submission of the bid or proposal—that it has legitimate business reasons for proposing the level of subcontracting in its Subcontractor Utilization Plan. In making its determination, Agency shall consider factors that shall include, but not be limited to, whether the bidder or proposer, 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 for under one million dollars represented by the **Target Subcontracting Percentage**. In making such determination, Agency may consider whether the Subcontractor Utilization Plan is consistent with past subcontracting practices of the bidder or proposer, as applicable, and whether the bidder or proposer, as applicable, has made good faith efforts to identify portions of the Contract that it intends to subcontract.

11. Modification of Subcontractor Utilization Plan. A Contractor may request a modification of its Subcontractor Utilization Plan (**Subcontractor Participation Goals**) 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 Subcontractor Utilization Plan as part of its bid submission.** The Agency may grant a request for Modification of a Contractor's Subcontractor 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 **Subcontractor Participation Goals**. In making such determination, Agency shall consider evidence of the following efforts, as applicable, along with any other relevant factors:

(a) 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;
(b) The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;
(c) The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs and WBEs that their interest in the Contract was solicited;
(d) 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 Subcontractor Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;
(e) 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;
(f) The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts;
(g) Timely written requests for assistance made by the Contractor to Agency's M/WBE liaison officer and to DSBS;
(h) 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.

12. If this Contract is for an indefinite quantity of construction or professional services or is a requirements type contract and the Contractor has submitted a Subcontractor Utilization Plan and has committed to subcontract work to MBEs and/or WBEs in order to meet the **Subcontractor Participation Goals**, the Contractor will not be deemed in violation of the M/WBE 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 **Subcontractor Participation Goals** have been established for 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.

award to subcontractors for amounts under $1 million; (c) in cases where the prospective contractor intends to award subcontracts for amounts under $1 million, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs; and (d) the general time frames in which such work by MBEs and/or WBEs is scheduled to occur. In the event that this Subcontractor Utilization Plan indicates that the bidder or proposer, as applicable, does not intend to award the **Target Subcontracting Percentage**, 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 **Target Subcontracting Percentage** in accordance with Local Law 129 and Part A, Section 10 below.

THE BIDDER/PROPOSER MUST COMPLETE THE SUBCONTRACTOR UTILIZATION PLAN INCLUDED HEREIN (SCHEDULE B, PART II). SUBCONTRACTOR UTILIZATION PLANS WHICH DO NOT INCLUDE THE REQUIRED AFFIRMATIONS WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE TARGET SUBCONTRCTING PERCENTAGE IS GRANTED (SCHEDULE B PART III). IN THE EVENT THAT THE CITY DETERMINES THAT VENDOR HAS SUBMITTED A SUBCONTRACTOR UTILIZATION PLAN WHERE THE REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER ASPECTS OF THE PLAN ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE AFFIRMATION, THE VENDOR 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 PLAN 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 EMAILED OR FAXED (IF THE VENDOR 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.

5. Where a Subcontractor 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. **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 Subcontractor Participation Goals established for this Contract by proposing one or more subcontractors that are M/WBEs for any portion of the Wicks trade work if the amount to be awarded to such M/WBE subcontractor is under $1 million.** 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. M/WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the M/WBE participation goals. Such certification must occur prior to the firms' commencement of work as subcontractors. A list of M/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.

7. Where a Subcontractor 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 paid to subcontractors (including subcontractors that are not MBEs or WBEs); the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor pursuant to such plan as well as 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 paid to subcontractors (including subcontractors that are not MBEs or WBEs); 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 hired pursuant to such plan, 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 Subcontractor Utilization Plan, Agency shall take appropriate action, in accordance with Local Law 129 and Article II below, unless the Contractor has obtained a modification of its Subcontractor Utilization Plan in accordance with Local Law 129 and Part A, Section 11 below.

ARTICLE 77 – 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 Section 6-129 to the Administrative Code of the City of New York. The local law creates a program for participation by minority-owned and women-owned business enterprises (MBEs and WBEs) in City procurement. As stated in the 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 made pursuant to Local Law 129, and the rules of the Department of Small Business Services ("DSBS") promulgated thereunder.

If this Contract is subject to the Minority-Owned and Women-Owned Business Enterprise ("M/WBE") program created by Local Law 129, the specific requirements of M/WBE participation for this Contract are set forth in Schedule B of the Contract (entitled the "Subcontractor Utilization Plan"), and are detailed below. The Contractor must comply with all applicable M/WBE requirements for this Contract. Schedule B of the Contract ("Subcontractor Utilization Plan") is included in the Bid Booklet.

Article I, Part A, below, sets forth provisions related to the participation goals for construction 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 AND PROFESSIONAL SERVICES CONTRACTS

1. The Target Subcontracting Percentage applicable to this Contract is set forth on Schedule B, Part I to this Contract (see Page 1, line (1)). The "Target Subcontracting Percentage" is the percentage of the total Contract which Agency anticipates that the prime contractor for this Contract would in the normal course of business award to one or more subcontractors for amounts under $1 million for construction and professional services.

A prospective contractor may seek a full or partial pre-award waiver of the **Target Subcontracting Percentage** in accordance with Local Law 129 and Part A, Section 10 below. To apply for the a full or partial waiver of the **Target Subcontracting Percentage**, a prospective contractor must complete Part III (Page 4) of Schedule B, and must submit such request no later than seven (7) days prior to the date and time the bids or proposals are due, in writing to the Agency by e-mail at poped@ddc.nyc.gov or via facsimile at (718) 391-1885. Bidders/proposers who have submitted requests will receive a response by no later than two (2) calendar days prior to the date bids or proposals are due, provided, however, that if that date would fall on a weekend or holiday, a response will be provided by close-of-business on the business day before such weekend or holiday date.

2. The **Subcontractor Participation Goals** established for this Contract are set forth on Schedule B, Part I to this Contract (see Page 1, line (2) and/or line (3)). The **Subcontractor Participation Goals** represent a percentage of the total dollar value of all construction and/or professional services subcontracts under this Agreement for amounts under $1 million.

3. If **Subcontractor Participation Goals** have been established for this Contract, Contractor agrees or shall agree as a material term of the Agreement that, with respect to the total amount of the Agreement to be awarded to one or more subcontractors pursuant to subcontracts for amounts under $1 million, Contractor shall be subject to the **Subcontractor Participation Goals**, unless the goals are modified by Agency in accordance with Local Law 129 and Part A, Section 11 below.

4. If **Subcontractor 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, Part II Subcontractor Utilization Plan (see Page 2-3) indicating: (a) the percentage of work it intends to subcontract; (b) the percentage of work it intends to

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: sixteen million nine hundred seventy six thousand nine hundred sixty two dollars Dollars, ($16,976,962.00), 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**.

ARTICLE 76. ELECTRONIC FUNDS TRANSFER

76.1 In accordance with Section 6-107.1 of the New York City Administrative Code, the Contractor agrees to accept payments under this Agreement from the City by electronic funds transfer. An electronic funds transfer 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 Agreement, 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 Finance with information necessary for Contractor to receive electronic funds transfer payments through the 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 agreement. 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 agency head may waive the application of the requirements herein to payments on contracts entered into pursuant to §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 contracting agency may waive the requirements hereunder for payments in the following circumstances: (i) for individuals or classes of individuals for whom compliance imposes a hardship; (ii) for classifications or types of checks; or (iii) in other circumstances as may be necessary in the interest of the City.

AUTHORITY

MAYOR'S CERTIFICATE NO. CBX DATED
BUDGET DIRECTOR'S CERTIFICATE NO. DATED

APPROPRIATION
COMMISSIONER'S CERTIFICATE

In conformity with the provisions of Section 6-101of 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

Sixteen million nine hundred seventy six thousand nine hundred sixty two dollars

Dollars ($16,976,962.00)

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.

_____

Deputy 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

ACKNOWLEDGMENT BY COMMISSIONER

State of New York County of Queens ss:

On this 14th day of April 2014, before me personally came David Resnick 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, 20 17

MAYOR'S CERTIFICATE OR CERTIFICATE OF THE DIRECTOR OF THE BUDGET

Performance Bond #1 (Pages 80 to 83): 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

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;

BOND NO: SU 1116811

Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than $5 Million.

PERFORMANCE BOND #2

KNOW ALL PERSONS BY THESE PRESENTS, That we,

ADAM'S EUROPEAN CONTRACTING INC.

589 JOHNSON AVENUE

BROOKLYN, NY 11237

hereinafter referred to as the "Principal", and

ARCH INSURANCE COMPANY

ONE LIBERTY PLAZA, FLOOR 29

NEW YORK, NY 10006

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

**SIXTEEN MILLION NINE HUNDRED SEVENTY SIX THOUSAND NINE HUNDRED

SIXTY TWO AND 00/100 DOLLARS **

($ 16,976,962.00) 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: EP6-KENT2 E-PIN: 85014B0027001 DDC PIN: 8502014CR0001C

REHABILITATION AND UPGRADE OF DEP SHAFT MAINTENANCE BUILDING

BOROUGH OF BROOKLYN

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 84 to 87): Use if the total contract price is more than $5 Million.

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 84 to 87): Use if the total contract price is more than $5 Million.

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 4th day of APRIL, 2014.

(Seal) ADAM'S EUROPEAN CONTRACTING INC. (L.S.)
Principal
By: M. Skarzynski
MALGORZATA SKARZYNSKI - CEO

(Seal) ARCH INSURANCE COMPANY
Surety
By:
DAVID A. GOLDSTEIN, ATTORNEY-IN-FACT

(Seal) _____
Surety
By: _____

(Seal) _____
Surety
By: _____

(Seal) _____
Surety
By: _____

(Seal) _____
Surety

Bond Premium Rate SLIDING SCALE

Bond Premium Cost $133,931.00

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 84 to 87): Use if the total contract price is more than $5 Million.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of NEW YORK County of KINGS ss:

On this 7th day of APRIL, 2014 before me personally came MALGORZATA SKARZYNSKI to me known, who, being by me duly sworn did depose and say that he/she resides at 20 SHERWOOD AVENUE, GREENWICH, CT 06831; that he/she is the CEO of the corporation described in and which executed the foregoing instrument; and that ~~he~~ she signed ~~his~~ her name to the foregoing instrument by order of the directors of said corporation as the duly authorized and binding act thereof.

Dominika Majewska

Notary Public or Commissioner of Deeds

DOMINIKA D MAJEWSKA
Notary Public - State of New York
NO. 01MA6226908
Qualified in Queens County
My Commission Expires Aug 16, 2014

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.

ACKNOWLEDGEMENT OF SURETY

State of NEW YORK)

:ss:

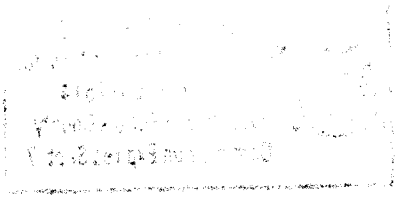
County of SUFFOLK)

On the 4TH day of APRIL , 20 14, before me personally came DAVID A. GOLDSTEIN to me known, who, being by me duly sworn, did depose and say the (s)he resides at MERRICK, NY that (s)he is the Attorney-In-Fact of ARCH INSURANCE COMPANY the Corporation described in and which executed the above instrument; that (s)he knows the seal of said Corporation; that one of the seals affixed by order of the Board of Directors of said Corporation; and that (s)he signed his/her name thereto by like order.

JENNIFER SPADARO
Notary Public State of New York
No. 01SP5017514
Qualified in Suffolk County
Commission Expires Sept. 7
2017

Jennifer Spadaro

Notary Public



BOND NO: SU 1116811

AIC 0000057488

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON BLUE BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for Mortgage, Note, Loan, Letter of Credit, Bank Deposit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWER OF ATTORNEY

Know All Persons By These Presents:

That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the "Company") does hereby appoint:

David A. Goldstein, Frank Strcich and Glenn Glubiak of Smithtown, NY (EACH)

its true and lawful Attorney(s)in-Fact, to make, execute, seal, and deliver from the date of issuance of this power for and on its behalf as surety, and as its act and deed:

Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars ($90,000,000.00).

This authority does not permit the same obligation to be split into two or more bonds In order to bring each such bond within the dollar limit of authority as set forth herein.

The execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and amply to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on September 15, 2011, true and accurate copies of which are hereinafter set forth and are hereby certified to by the undersigned Secretary as being in full force and effect:

"VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitations set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process."

This Power of Attorney is signed, sealed and certified by facsimile under and by authority of the following resolution adopted by the unanimous consent of the Board of Directors of the Company on September 15, 2011:

VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, and the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile on any power of attorney or bond executed pursuant to the resolution adopted by the Board of Directors on September 15, 2011, and any such power so executed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company.

In Testimony Whereof, the Company has caused this instrument to be signed and its corporate seal to be affixed by their authorized officers, this 19th day of September, 2012.

Attested and Certified

Arch Insurance Company

Martin J. Nilsen, Secretary

David M. Finkelstein, Executive Vice President

STATE OF PENNSYLVANIA SS

COUNTY OF PHILADELPHIA SS

I, Kathleen Marcinkus, a Notary Public, do hereby certify that Martin J. Nilsen and David M. Finkelstein personally known to me to be the same persons whose names are respectively as Secretary and Executive Vice President of the Arch Insurance Company, a Corporation organized and existing under the laws of the State of Missouri, subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that they being thereunto duly authorized signed, sealed with the corporate seal and delivered the said instrument as the free and voluntary act of said corporation and as their own free and voluntary acts for the uses and purposes therein set forth.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
KATHLEEN MARCINKUS, Notary Public
City of Philadelphia, Phila. County
My Commission Expires March 14, 2014

Kathleen Marcinkus, Notary Public
My commission expires 03/14/2014

CERTIFICATION

I, Martin J. Nilsen, Secretary of the Arch Insurance Company, do hereby certify that the attached Power of Attorney dated September 19, 2012 on behalf of the person(s) as listed above is a true and correct copy and that the same has been in full force and effect since the date thereof and is in full force and effect on the date of this certificate; and I do further certify that the said David M. Finkelstein, who executed the Power of Attorney as Executive Vice President, was on the date of execution of the attached Power of Attorney the duly elected Executive Vice President of the Arch Insurance Company.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the Arch Insurance Company on this 4th day of April, 2014.

Martin J. Nilsen, Secretary

This Power of Attorney limits the acts of those named therein to the bonds and undertakings specifically named therein and they have no authority to bind the Company except in the manner and to the extent herein stated.

PLEASE SEND ALL CLAIM INQUIRIES RELATING TO THIS BOND TO THE FOLLOWING ADDRESS:

Arch Insurance – Surety Division
3 Parkway, Suite 1500
Philadelphia, PA 19102

ARCH INSURANCE COMPANY
STATEMENT OF FINANCIAL CONDITION
December 31, 2013

Assets

Cash in Banks	$ 113,241,149
Bonds owned	1,730,368,149
Stocks	433,238,605
Premiums in course of collection	251,285,768
Accrued interest and other assets	312,730,603
Total Assets	$ 2,840,864,274

Liabilities

Reserve for losses and adjustment expenses	$ 1,200,735,312
Reserve for unearned premiums	307,521,736
Ceded reinsurance premiums payable	105,942,093
Amounts withheld or retained by company for account of others	188,907,409
Reserve for taxes, expenses and other liabilities	301,130,327
Total Liabilities	2,104,236,877
Surplus as regards policyholders	736,627,397
Total Surplus and Liabilities	$ 2,840,864,274

By: _____ Attest: _____
Senior Vice President, Chief Financial Officer and Treasurer
Senior Vice President, General Counsel and Secretary

State of New Jersey)
) SS
County of Hudson)

Thomas James Ahern, Senior Vice President, Chief Financial Officer and Treasurer and Patrick Kenneth Nails, Senior Vice President, General Counsel and Secretary being duly sworn, of ARCH INSURANCE COMPANY, Missouri; and that the foregoing is a true and correct statement of financial condition of said company, as of December 31, 2013.

Subscribed and sworn to before me, this 10th day of March, 2014

Notary Public

_____

ALLISON M. KELLY
Commission # 2411013
Notary Public, State of New Jersey
My Commission Expires
August 03, 2016

BOND NO: SU 1116811

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, ADAM'S EUROPEAN CONTRACTING INC.

589 JOHNSON AVENUE

BROOKLYN, NY 11237

hereinafter referred to as the "Principal", and ARCH INSURANCE COMPANY

ONE LIBERTY PLAZA, FLOOR 29

NEW YORK, NY 10006

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

**SIXTEEN MILLION NINE HUNDRED SEVENTY SIX THOUSAND NINE HUNDRED

SIXTY TWO AND 00/100 DOLLARS **

($16,976,962.00) 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: EP6-KENT2 E-PIN: 85014B0027001 DDC PIN: 8502014CR0001C

REHABILITATION AND UPGRADE OF DEP SHAFT MAINTENANCE BUILDING

BOROUGH OF BROOKLYN

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 88 to 91): Use for any contract for which a Payment Bond is required.

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 88 to 91): Use for any contract for which a Payment Bond is required.

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 4th day of APRIL, 2014.

(Seal) ADAM'S EUROPEAN CONTRACTING INC (L.S.)
Principal

By: _____
MALGORZATA SKARZYNSKI - CEO

(Seal) ARCH INSURANCE COMPANY
Surety

By: _____
DAVID A. GOLDSTEIN, 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 88 to 91): Use for any contract for which a Payment Bond is required.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of NEW YORK County of KINGS ss:

On this 7th day of APRIL, 2014 before me personally came MALGORZATA SKARZYNSKI to me known, who, being by me duly sworn did depose and say that he resides at 20 SHERWOOD AVENUE, GREENWICH, CT 06831 that she is the CEO of the corporation described in and which executed the foregoing instrument; that she 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 she signed ~~his~~ her name thereto by like order.

Dominika Majewska
Notary Public or Commissioner of Deeds

DOMINIKA D MAJEWSKA
Notary Public - State of New York
NO. 01MA6226908
Qualified in Queens County
My Commission Expires Aug 16, 2014

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

ACKNOWLEDGEMENT OF SURETY

State of NEW YORK)

:ss:

County of SUFFOLK)

On the 4TH day of APRIL , 20 14, before me personally came DAVID A. GOLDSTEIN to me known, who, being by me duly sworn, did depose and say the (s)he resides at MERRICK, NY that (s)he is the Attorney-In-Fact of ARCH INSURANCE COMPANY the Corporation described in and which executed the above instrument; that (s)he knows the seal of said Corporation; that one of the seals affixed by order of the Board of Directors of said Corporation; and that (s)he signed his/her name thereto by like order.

JENNIFER SPADARO
Notary Public State of New York
No. 01SP5017514
Qualified in Suffolk County
Commission Expires Sept. 7
2017

Jennifer Spadaro

Notary Public

BOND NO: SU 1116811

AIC 0000057489

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON BLUE BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for Mortgage, Note, Loan, Letter of Credit, Bank Deposit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWER OF ATTORNEY

Know All Persons By These Presents:

That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the "Company") does hereby appoint:

David A. Goldstein, Frank Strcich and Glenn Glubiak of Smithtown, NY (EACH)

its true and lawful Attorney(s)in-Fact, to make, execute, seal, and deliver from the date of issuance of this power for and on its behalf as surety, and as its act and deed:

Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars ($90,000,000.00).

This authority does not permit the same obligation to be split into two or more bonds in order to bring each such bond within the dollar limit of authority as set forth herein.

The execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and amply to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on September 15, 2011, true and accurate copies of which are hereinafter set forth and are hereby certified to by the undersigned Secretary as being in full force and effect:

"VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitations set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process."

This Power of Attorney is signed, sealed and certified by facsimile under and by authority of the following resolution adopted by the unanimous consent of the Board of Directors of the Company on September 15, 2011:

VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, and the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile on any power of attorney or bond executed pursuant to the resolution adopted by the Board of Directors on September 15, 2011, and any such power so executed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company.

In Testimony Whereof, the Company has caused this instrument to be signed and its corporate seal to be affixed by their authorized officers, this 19th day of September, 2012.

Attested and Certified

Arch Insurance Company

Martin J. Nilsen, Secretary

David M. Finkelstein, Executive Vice President

STATE OF PENNSYLVANIA SS

COUNTY OF PHILADELPHIA SS

I, Kathleen Marcinkus, a Notary Public, do hereby certify that Martin J. Nilsen and David M. Finkelstein personally known to me to be the same persons whose names are respectively as Secretary and Executive Vice President of the Arch Insurance Company, a Corporation organized and existing under the laws of the State of Missouri, subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that they being thereunto duly authorized signed, sealed with the corporate seal and delivered the said instrument as the free and voluntary act of said corporation and as their own free and voluntary acts for the uses and purposes therein set forth.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
KATHLEEN MARCINKUS, Notary Public
City of Philadelphia, Phila. County
My Commission Expires March 14, 2014

Kathleen Marcinkus, Notary Public
My commission expires 03/14/2014

CERTIFICATION

I, Martin J. Nilsen, Secretary of the Arch Insurance Company, do hereby certify that the attached Power of Attorney dated September 19, 2012 on behalf of the person(s) as listed above is a true and correct copy and that the same has been in full force and effect since the date thereof and is in full force and effect on the date of this certificate; and I do further certify that the said David M. Finkelstein, who executed the Power of Attorney as Executive Vice President, was on the date of execution of the attached Power of Attorney the duly elected Executive Vice President of the Arch Insurance Company.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the Arch Insurance Company on this 4th day of April, 2014.

Martin J. Nilsen, Secretary

This Power of Attorney limits the acts of those named therein to the bonds and undertakings specifically named therein and they have no authority to bind the Company except in the manner and to the extent herein stated.

PLEASE SEND ALL CLAIM INQUIRIES RELATING TO THIS BOND TO THE FOLLOWING ADDRESS:

Arch Insurance – Surety Division
3 Parkway, Suite 1500
Philadelphia, PA 19102

ARCH INSURANCE COMPANY
STATEMENT OF FINANCIAL CONDITION
December 31, 2013

Assets

Cash in Banks	$ 113,241,149
Bonds owned	1,730,368,149
Stocks	433,238,605
Premiums in course of collection	251,285,768
Accrued interest and other assets	312,730,603
Total Assets	$ 2,840,864,274

Liabilities

Reserve for losses and adjustment expenses	$ 1,200,735,312
Reserve for unearned premiums	307,521,736
Ceded reinsurance premiums payable	105,942,093
Amounts withheld or retained by company for account of others	188,907,409
Reserve for taxes, expenses and other liabilities	301,130,327
Total Liabilities	2,104,236,877
Surplus as regards policyholders	736,627,397
Total Surplus and Liabilities	$ 2,840,864,274

By: _____ Attest: _____
Senior Vice President, Chief Financial Officer and Treasurer
Senior Vice President, General Counsel and Secretary

State of New Jersey)
) SS
County of Hudson)

Thomas James Ahern, Senior Vice President, Chief Financial Officer and Treasurer and Patrick Kenneth Nails, Senior Vice President, General Counsel and Secretary being duly sworn, of ARCH INSURANCE COMPANY, Missouri; and that the foregoing is a true and correct statement of financial condition of said company, as of December 31, 2013.

Subscribed and sworn to before me, this 10th day of March, 2014

Notary Public

_____

ALLISON M. KELLY
Commission # 2411013
Notary Public, State of New Jersey
My Commission Expires
August 03, 2016

Performance Bond #1 (Pages 80 to 83): 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.

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 80 to 83): 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.

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 80 to 83): 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.

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 84 to 87): Use if the total contract price is more than $5 Million.

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 84 to 87): Use if the total contract price is more than $5 Million.

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 84 to 87): Use if the total contract price is more than $5 Million.

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 84 to 87): 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 88 to 91): Use for any contract for which a Payment Bond is required.

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

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 88 to 91): Use for any contract for which a Payment Bond is required.

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.

Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

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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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.

Contracting agencies anticipating doing work which requires the employment of a trade or classification not included in this schedule must request the Comptroller to establish a proper classification for the work pursuant to Labor Law §220 (3-a) (a). The prevailing rate schedule as promulgated by the Comptroller, must, in compliance with law, be annexed to and form part of the contract.

Contractors are solely responsible for maintaining original payroll records which delineate, among other things, the hours each employee worked within a given classification. Contractors using rates and/or classifications not promulgated by the Comptroller do so at their own risk. Additionally, prior to bid, Agency Chief Contracting Officers must contact the Bureau of Labor Law when the need arises for a work classification not published in this schedule.

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 for work performed during the effective period, unless otherwise noted. You will be notified of any changes to this schedule by addenda published on our web site at www.comptroller.nyc.gov. The rate of wages and supplemental benefits to be paid or provided are those that prevail at the time the work is being performed. Preliminary schedules for future one-year periods are published annually in the City Record on or about June 1st of each succeeding year. Final schedules are published on or about July 1st in the City Record and on our web site at 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.

Answers to questions concerning prevailing trade practices may be obtained from the Classification Unit by calling (212) 669-7974. 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 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.

Contractors are advised to review the applicable Collective Bargaining Agreements and the Comptroller's Prevailing Wage Schedule before bidding on Public Work. If there are any questions concerning prevailing wages, benefits, overtime, Holiday pay, shift differentials or any prevailing practice, please contact this office.

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.

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.

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.

Wasyl Kinach, P.E.
Director of Classifications
Bureau of Labor Law

TABLE OF CONTENTS

ASBESTOS HANDLER
(Hazardous Material; Disturbs, removes, encapsulates, repairs, or encloses friable asbestos material)

Asbestos Handler

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.90
Supplemental Benefit Rate per Hour: $15.05

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $44.40
Supplemental Benefit Rate per Hour: $38.44

Blaster (Hydraulic)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.17
Supplemental Benefit Rate per Hour: $38.44

Blaster - Trac Drill Hydraulic

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $40.04
Supplemental Benefit Rate per Hour: $38.44

Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.30
Supplemental Benefit Rate per Hour: $38.44

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.32
Supplemental Benefit Rate per Hour: $38.44

Blaster - Powder Carriers

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $34.66
Supplemental Benefit Rate per Hour: $38.44

Blaster - Hydraulic Trac Drill Chuck Tender

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $33.46
Supplemental Benefit Rate per Hour: $38.44

Blaster - Chuck Tender & Nipper

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $32.75
Supplemental Benefit Rate per Hour: $38.44

Blaster - Magazine Keepers: (Watch Person)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $19.76
Supplemental Benefit Rate per Hour: $38.44

Overtime Description

Magazine Keepers:
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

A 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: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $49.47
Supplemental Benefit Rate per Hour: $39.78
Supplemental Note: The above rate applies to repair or maintenance and new construction; For time and one half overtime - $59.08; For double overtime - $78.37.

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $50.45
Supplemental Benefit Rate per Hour: $41.31
Supplemental Note: The above rate applies to repair or maintenance and new construction; 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.
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.44
Supplemental Benefit Rate per Hour: $27.53

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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $48.08
Supplemental Benefit Rate per Hour: $41.10

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

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: 7/1/2013 - 7/17/2013
Wage Rate per Hour: $46.74
Supplemental Benefit Rate per Hour: $42.37

Effective Period: 7/18/2013 - 6/30/2014
Wage Rate per Hour: $46.82
Supplemental Benefit Rate per Hour: $44.97

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 10:00 P.M. shall work eight and one half hours allowing for one half hour for lunch, but will be paid for 9 hours including benefits at the straight time rate for 8 hours.

(Carpenters District Council)

CEMENT & CONCRETE WORKER

Cement & Concrete Worker

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.33
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

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.63
Supplemental Benefit Rate per Hour: $39.05
Supplemental Note: Overtime supplemental benefit rate per hour: $57.55

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.44
Supplemental Benefit Rate per Hour: $19.75

Core Driller Helper

Effective Period: 7/1/2013 - 6/30/2014

Wage Rate per Hour: $28.60
Supplemental Benefit Rate per Hour: $19.75

Core Driller Helper(Third year in the industry)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.74
Supplemental Benefit Rate per Hour: $19.75

Core Driller Helper (Second year in the industry)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.88
Supplemental Benefit Rate per Hour: $19.75

Core Driller Helper (First year in the industry)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.02
Supplemental Benefit Rate per Hour: $19.75

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)

DERRICKPERSON AND RIGGER

Derrick Person & Rigger

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $40.50
Supplemental Benefit Rate per Hour: $42.07
Supplemental Note: The above supplemental rate applies for work performed in Manhattan, Bronx, Brooklyn and Queens. $43.49 - For work performed in Staten Island.

Derrick Person & Rigger - Site Work

For site work where no rigging is involved.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $30.00
Supplemental Benefit Rate per Hour: $31.32

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $59.40

Supplemental Benefit Rate per Hour: $44.97

Diver Tender (Marine)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.05
Supplemental Benefit Rate per Hour: $44.97

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.82
Supplemental Benefit Rate per Hour: $44.97

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 but will be paid 113% of the straight time hourly wage and the straight time supplemental benefits.

(Carpenters District Council)

DRIVER: TRUCK (TEAMSTER)

Driver - Automobile Chauffeur (Dump Truck)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.11
Supplemental Benefit Rate per Hour: $40.20

Driver - Heavy Equipment Trailer Driver

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.61
Supplemental Benefit Rate per Hour: $40.20
Note: For time and one half overtime Wage Rate - $57.16; for double time overtime Wage Rate - $76.21

Driver - Euclid & Turnapull Operator

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.67
Supplemental Benefit Rate per Hour: $40.20

Driver - Six Wheeler(3 Axle) Tractors & Trailers

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.11
Supplemental Benefit Rate per Hour: $40.20
Note: For time and one half overtime Wage Rate - $58.01; for double time overtime Wage Rate - $77.34

Driver - Boom Truck

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.36
Supplemental Benefit Rate per Hour: $40.20
Note: For time and one half overtime Wage Rate - $58.01; for double time overtime Wage Rate - $77.34

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.
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 Driver (Sand & Gravel)

Effective Period: 7/1/2013 - 6/30/2014

Wage Rate per Hour: $35.71
Supplemental Benefit Rate per Hour: $37.27

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

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: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $52.00
Supplemental Benefit Rate per Hour: $46.13

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $53.00
Supplemental Benefit Rate per Hour: $47.54

Electrician "A" (Regular Day Overtime)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $78.00
Supplemental Benefit Rate per Hour: $49.39

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $79.50
Supplemental Benefit Rate per Hour: $50.86

Electrician "A" (Day Shift)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $52.00
Supplemental Benefit Rate per Hour: $46.13

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $53.00
Supplemental Benefit Rate per Hour: $47.54

Electrician "A" (Day Shift Overtime After 8 hours)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $78.00
Supplemental Benefit Rate per Hour: $49.39

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $79.50
Supplemental Benefit Rate per Hour: $50.86

Electrician "A" (Swing Shift)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $61.01
Supplemental Benefit Rate per Hour: $52.47

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $62.19
Supplemental Benefit Rate per Hour: $54.07

Electrician "A" (Swing Shift Overtime After 7.5 hours)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $91.52
Supplemental Benefit Rate per Hour: $56.30

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $93.29
Supplemental Benefit Rate per Hour: $57.97

Electrician "A" (Graveyard Shift)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $68.34
Supplemental Benefit Rate per Hour: $57.83

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $69.66
Supplemental Benefit Rate per Hour: $59.59

Electrician "A" (Graveyard Shift Overtime After 7 hours)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $102.51
Supplemental Benefit Rate per Hour: $62.11

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $104.49
Supplemental Benefit Rate per Hour: $63.96

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.

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.

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $26.50
Supplemental Benefit Rate per Hour: $19.56
First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: $25.80
First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: $19.21
First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: $22.00
First and Second Year "M" Supplemental Rate- Hired after 5/10/07: $17.30

Effective Period: 5/14/2014 - 6/30/2014
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

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: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $39.75
Supplemental Benefit Rate per Hour: $21.23
First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: $38.70
First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: $20.83
First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: $33.00
First and Second Year "M" Supplemental Rate- Hired after 5/10/07: $18.68

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $40.50
Supplemental Benefit Rate per Hour: $21.01
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

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
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: 7/1/2013 - 6/30/2014
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

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: 7/1/2013 - 5/20/2014
Wage Rate per Hour: $52.00
Supplemental Benefit Rate per Hour: $47.90

Effective Period: 5/21/2014 - 6/30/2014
Wage Rate per Hour: $53.00
Supplemental Benefit Rate per Hour: $49.34

Electrician - Electro Pole Foundation Installer

Effective Period: 7/1/2013 - 5/20/2014
Wage Rate per Hour: $39.42
Supplemental Benefit Rate per Hour: $36.46

Effective Period: 5/21/2014 - 6/30/2014
Wage Rate per Hour: $40.18
Supplemental Benefit Rate per Hour: $37.73

Electrician - Electro Pole Maintainer

Effective Period: 7/1/2013 - 5/20/2014
Wage Rate per Hour: $33.75
Supplemental Benefit Rate per Hour: $32.83

Effective Period: 5/21/2014 - 6/30/2014
Wage Rate per Hour: $34.40
Supplemental Benefit Rate per Hour: $34.00

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $57.01
Supplemental Benefit Rate per Hour: $34.48

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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.14
Supplemental Benefit Rate per Hour: $33.02

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
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

Cherrypickers 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: 7/1/2013 - 6/30/2014
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, Cherrypickers. 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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $59.24
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $94.78

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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.10
Supplemental Benefit Rate per Hour: $31.93
Supplemental Note: $57.46 on overtime
Shift Wage Rate: $62.56

Engineer - Heavy Construction Maintenance Engineer IV

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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, Gunite Machines, Battery of Compressors, Crawler Cranes, two-person Trenching Machines.

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $53.43
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: 7/1/2013 - 6/30/2014
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

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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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $54.04
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.55
Supplemental Benefit Rate per Hour: $17.65

Instrument Person

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $29.41
Supplemental Benefit Rate per Hour: $17.65

Rodperson

Effective Period: 7/1/2013 - 6/30/2014
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
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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

(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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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

(Operating Engineer Local #15-D)

ENGINEER - FIELD (STEEL ERECTION)

Field Engineer - Steel Erection Party Chief

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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

(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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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

Pile Drivers & Rigs (employing Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $61.53
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours
Shift Wage Rate: $98.45

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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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 - Paving II

Asphalt Roller

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $56.16
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Steel Erection I

Three Drum Derricks

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $63.58
Supplemental Benefit Rate per Hour: $28.60
Supplemental Note: $51.75 overtime hours

Operating Engineer - Building Work VII

Rack & Pinion and House Cars

Effective Period: 7/1/2013 - 6/30/2014
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

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.15
Supplemental Benefit Rate per Hour: $38.50

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: 7/1/2013 - 10/31/2013
Wage Rate per Hour: $42.00
Supplemental Benefit Rate per Hour: $33.24
Supplemental Note: Supplemental Benefit Overtime Rate: $41.24

Effective Period: 11/1/2013 - 6/30/2014
Wage Rate per Hour: $42.00
Supplemental Benefit Rate per Hour: $34.09
Supplemental Note: Supplemental Benefit Overtime Rate: $42.59

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: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $23.50
Supplemental Benefit Rate per Hour: $18.54

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $23.60
Supplemental Benefit Rate per Hour: $19.04

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $56.48
Supplemental Benefit Rate per Hour: $33.31

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

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 shall be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). The 10th and 20th House Wrecker shall be apprentices. Other House Wreckers shall be Tier B House Wreckers.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $34.01
Supplemental Benefit Rate per Hour: $25.14

House Wrecker - Tier B

On all work sites the first, second, eleventh and every third House Wrecker thereafter shall be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). The 10th and 20th House Wrecker shall be apprentices. Other House Wreckers shall be Tier B House Wreckers.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.75
Supplemental Benefit Rate per Hour: $18.62

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

Paid Holidays
None

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL

Iron Worker - Ornamental

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.30
Supplemental Benefit Rate per Hour: $43.54
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)

IRON WORKER - STRUCTURAL

Iron Worker - Structural

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $46.75
Supplemental Benefit Rate per Hour: $62.48
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)

Laborer

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.25
Supplemental Benefit Rate per Hour: $33.25

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

Paid 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)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.25
Supplemental Benefit Rate per Hour: $12.30

Landscaper (3 - 6 years experience)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.25
Supplemental Benefit Rate per Hour: $12.30

Landscaper (up to 3 years experience)

Effective Period: 7/1/2013 - 6/30/2014

Wage Rate per Hour: $20.75
Supplemental Benefit Rate per Hour: $12.30

Groundperson

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.75
Supplemental Benefit Rate per Hour: $12.30

Tree Remover / Pruner

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $29.25
Supplemental Benefit Rate per Hour: $12.30

Landscaper Sprayer (Pesticide Applicator)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $19.25
Supplemental Benefit Rate per Hour: $12.30

Watering - Plant Maintainer

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $14.25
Supplemental Benefit Rate per Hour: $12.30

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.

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $49.19
Supplemental Benefit Rate per Hour: $32.24

Marble Finisher

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.05
Supplemental Benefit Rate per Hour: $31.43

Marble Polisher

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $34.73
Supplemental Benefit Rate per Hour: $24.60

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.00
Supplemental Benefit Rate per Hour: $25.74

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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $34.07

Supplemental Benefit Rate per Hour: $19.77

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.27
Supplemental Benefit Rate per Hour: $14.08

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
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

(Local #79)

METALLIC LATHER

Metallic Lather

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.43
Supplemental Benefit Rate per Hour: $40.15
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

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $47.69
Supplemental Benefit Rate per Hour: $48.87

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $44.39
Supplemental Benefit Rate per Hour: $35.11
Supplemental Note: Supplemental benefits for overtime to be paid at the rate of $46.08 per hour.

Mosaic Mechanic - Mosaic & Terrazzo Finisher

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.78
Supplemental Benefit Rate per Hour: $35.11
Supplemental Note: Supplemental benefits for overtime to be paid at the rate of $46.08 per hour.

Mosaic Mechanic - Machine Operator Grinder

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.78
Supplemental Benefit Rate per Hour: $35.11
Supplemental Note: Supplemental benefits for overtime to be paid at the rate of $46.08 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: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $37.50
Supplemental Benefit Rate per Hour: $25.62
Supplemental Note: $30.25 on overtime

Effective Period: 5/1/2014 - 6/30/2014
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: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $40.50
Supplemental Benefit Rate per Hour: $25.62
Supplemental Note: $30.25 on overtime

Effective Period: 5/1/2014 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $36.15
Supplemental Benefit Rate per Hour: $9.66

Journeyperson

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $33.00
Supplemental Benefit Rate per Hour: $11.62
Supplemental Note: Overtime Supplemental Benefit rate - $7.42; New Hire Rate (0-3 months) - $0.00

Lineperson (thermoplastic)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $37.00
Supplemental Benefit Rate per Hour: $11.62
Supplemental Note: Overtime Supplemental Benefit rate - $7.42; 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.
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $47.00
Supplemental Benefit Rate per Hour: $32.08

Painter - Power Tool

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $53.00
Supplemental Benefit Rate per Hour: $32.08

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: 7/1/2013 - 4/30/2014

Wage Rate per Hour: $39.00
Supplemental Benefit Rate per Hour: $29.23
Supplemental Note: Supplemental benefits are to be paid at the appropriate straight time and overtime rate.

Effective Period: 5/1/2014 - 6/30/2014
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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $43.54
Supplemental Benefit Rate per Hour: $33.55

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.67
Supplemental Benefit Rate per Hour: $33.55

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.12
Supplemental Benefit Rate per Hour: $33.55

Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $44.61
Supplemental Benefit Rate per Hour: $33.55

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.32
Supplemental Benefit Rate per Hour: $33.55

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 20% 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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $41.13
Supplemental Benefit Rate per Hour: $24.95

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 (½) hour to eat with this time being included in the seven (7) hours of work.

(Local #530)

PLASTERER - TENDER

Plasterer - Tender

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.00
Supplemental Benefit Rate per Hour: $25.74

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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $51.76
Supplemental Benefit Rate per Hour: $37.19
Supplemental Note: Overtime supplemental benefit rate per hour: $74.10

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 (MECHNICAL EQUIPMENT AND SERVICE)
(Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $33.46
Supplemental Benefit Rate per Hour: $16.93

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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $37.11
Supplemental Benefit Rate per Hour: $25.56

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.

(Plumbers Local #1)

PLUMBER: PUMP & TANK
(Installation and Maintenance)

Plumber - Pump & Tank

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $53.01
Supplemental Benefit Rate per Hour: $31.86

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

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.41
Supplemental Benefit Rate per Hour: $23.29

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $39.00
Supplemental Benefit Rate per Hour: $27.37

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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.41
Supplemental Benefit Rate per Hour: $23.29

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)

SHEET METAL WORKER

Sheet Metal Worker

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.96
Supplemental Benefit Rate per Hour: $43.19
Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Sheet Metal Worker - Duct Cleaner

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $12.90
Supplemental Benefit Rate per Hour: $8.07

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $36.77
Supplemental Benefit Rate per Hour: $43.19

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

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 journeyperson 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: 7/1/2013 - 7/31/2013
Wage Rate per Hour: $41.28
Supplemental Benefit Rate per Hour: $22.88
Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Effective Period: 8/1/2013 - 6/30/2014
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
None

(Local #28)

SIGN ERECTOR
(Sheet Metal, Plastic, Electric, and Neon)

Sign Erector

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.80
Supplemental Benefit Rate per Hour: $42.17

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

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $52.50

Supplemental Benefit Rate per Hour: $50.54
Supplemental Note: Overtime supplemental benefit rate: $100.34

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.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $52.50
Supplemental Benefit Rate per Hour: $50.54
Supplemental Note: Overtime supplemental benefit rate: $100.34

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $36.30
Supplemental Benefit Rate per Hour: $11.76

Refrigeration and Air Conditioner Service Person V

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $29.82
Supplemental Benefit Rate per Hour: $10.71

Refrigeration and Air Conditioner Service Person IV

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.71
Supplemental Benefit Rate per Hour: $9.80

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $21.21
Supplemental Benefit Rate per Hour: $9.12

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $17.60
Supplemental Benefit Rate per Hour: $8.50

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $10.95
Supplemental Benefit Rate per Hour: $7.90

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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $47.72
Supplemental Benefit Rate per Hour: $35.28

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.

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: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $44.32
Supplemental Benefit Rate per Hour: $21.66

Effective Period: 1/1/2014 - 6/24/2014

Wage Rate per Hour: $44.82
Supplemental Benefit Rate per Hour: $21.66

Effective Period: 6/25/2014 - 6/30/2014
Wage Rate per Hour: $45.32
Supplemental Benefit Rate per Hour: $21.66

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.94
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.

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.49
Supplemental Benefit Rate per Hour: $27.40

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
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $48.35
Supplemental Benefit Rate per Hour: $31.44

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $42.63
Supplemental Benefit Rate per Hour: $44.54

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
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 but will be paid 113% of the straight time hourly wage and the straight time supplemental benefits.

(Local #1536)

TUNNEL WORKER

Blasters, Mucking Machine Operators (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $54.20
Supplemental Benefit Rate per Hour: $48.20

Tunnel Workers (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $52.31
Supplemental Benefit Rate per Hour: $46.59

Top Nipper (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $50.42
Supplemental Benefit Rate per Hour: $44.92

Changehouse Attendant: Powder Watchperson (Compressed Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $43.94
Supplemental Benefit Rate per Hour: $42.55

Blasters (Free Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $51.72
Supplemental Benefit Rate per Hour: $46.03

Tunnel Workers (Free Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $49.48
Supplemental Benefit Rate per Hour: $44.06

All Others (Free Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.73
Supplemental Benefit Rate per Hour: $40.75

Microtunneling (Free Air Rates)

Effective Period: 7/1/2013 - 6/30/2014
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
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.

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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: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 78% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $15.05

Asbestos Handler (Second 1000 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $15.05

Asbestos Handler (Third 1000 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 83% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $15.05

Asbestos Handler (Fourth 1000 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 89% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $15.05

(Local #78)

BOILERMAKER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Boilermaker (First Year)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $28.75

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $29.74

Boilermaker (Second Year: 1st Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.33

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $31.91

Boilermaker (Second Year: 2nd Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $31.91

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $33.05

Boilermaker (Third Year: 1st Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 80% of Journeyperson's rat
Supplemental Benefit Rate Per Hour: $33.49

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rat
Supplemental Benefit Rate Per Hour: $34.69

Boilermaker (Third Year: 2nd Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $35.05

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $36.34

Boilermaker (Fourth Year: 1st Six Months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $36.63

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $38.00

Boilermaker (Fourth Year: 2nd Six Months)

Effective Period: 7/1/2013 - 12/31/2013

Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $38.20

Effective Period: 1/1/2014 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Second 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Third 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Fourth 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Fifth 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $16.60

Bricklayer (Sixth 750 Hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 95% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: $16.60

(Bricklayer District Council)

CARPENTER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Carpenter (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $27.69
Effective 7/18/13 - Supplemental Benefit Rate Per Hour: $30.29

Carpenter (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $27.69
Effective 7/18/13 - Supplemental Benefit Rate Per Hour: $30.29

Carpenter (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $27.69
Effective 7/18/13 - Supplemental Benefit Rate Per Hour: $30.29

Carpenter (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $27.69
Effective 7/18/13 - Supplemental Benefit Rate Per Hour: $30.29

(Carpenters District Council)

CEMENT MASON
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Cement Mason (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

Cement Mason (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's Rate

Cement Mason (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $18.04

Cement & Concrete Worker (501 - 1000 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $18.87

Cement & Concrete Worker (1001 - 2000 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $24.25

Cement & Concrete Worker (2001 - 4000 hours)

Effective Period: 7/1/2013 - 6/30/2014
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 6)

Derrickperson & Rigger (stone) - First Year

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

(Local #197)

DOCKBUILDER/PILE DRIVER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Dockbuilder/Pile Driver (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

Dockbuilder/Pile Driver (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: $30.29

Dockbuilder/Pile Driver (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

Dockbuilder/Pile Driver (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $30.29

(Carpenters District Council)

ELECTRICIAN
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Electrician (First Year - Hired before 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $15.25
Supplemental Benefit Rate per Hour: $12.26
Overtime Wage Rate Per Hour: $22.88
Overtime Supplemental Rate Per Hour: $13.26

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $15.25
Supplemental Benefit Rate per Hour: $12.51
Overtime Wage Rate Per Hour: $22.88
Overtime Supplemental Rate Per Hour: $13.51

Electrician (First Year - Hired on or After 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $12.50
Supplemental Benefit Rate per Hour: $10.86
Overtime Wage Rate Per Hour: $18.75
Overtime Supplemental Rate Per Hour: $11.68

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $12.50
Supplemental Benefit Rate per Hour: $11.11
Overtime Wage Rate Per Hour: $18.75
Overtime Supplemental Rate Per Hour: $11.93

Electrician (Second Year - Hired before 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $18.05
Supplemental Benefit Rate per Hour: $13.68
Overtime Wage Rate Per Hour: $27.08
Overtime Supplemental Rate Per Hour: $14.87

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $18.05
Supplemental Benefit Rate per Hour: $13.93
Overtime Wage Rate Per Hour: $27.08
Overtime Supplemental Rate Per Hour: $15.12

Electrician (Second Year - Hired on or After 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $14.50
Supplemental Benefit Rate per Hour: $11.88
Overtime Wage Rate Per Hour: $21.75
Overtime Supplemental Rate Per Hour: $12.83

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $14.50
Supplemental Benefit Rate per Hour: $12.13
Overtime Wage Rate Per Hour: $21.75
Overtime Supplemental Rate Per Hour: $13.08

Electrician (Third Year - Hired before 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $20.15
Supplemental Benefit Rate per Hour: $14.75
Overtime Wage Rate Per Hour: $30.23
Overtime Supplemental Rate Per Hour: $16.08

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $20.15
Supplemental Benefit Rate per Hour: $15.00
Overtime Wage Rate Per Hour: $30.23
Overtime Supplemental Rate Per Hour: $16.33

Electrician (Third Year - Hired on or After 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $16.50
Supplemental Benefit Rate per Hour: $12.89
Overtime Wage Rate Per Hour: $24.75
Overtime Supplemental Rate Per Hour: $13.98

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $16.50
Supplemental Benefit Rate per Hour: $13.14
Overtime Wage Rate Per Hour: $24.75
Overtime Supplemental Rate Per Hour: $14.23

Electrician (Fourth Year - Hired before 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $22.10
Supplemental Benefit Rate per Hour: $15.74
Overtime Wage Rate Per Hour: $33.15
Overtime Supplemental Rate Per Hour: $17.20

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $22.10
Supplemental Benefit Rate per Hour: $15.99
Overtime Wage Rate Per Hour: $33.15
Overtime Supplemental Rate Per Hour: $17.45

Electrician (Fourth Year - Hired on or After 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $18.50
Supplemental Benefit Rate per Hour: $13.91
Overtime Wage Rate Per Hour: $27.75
Overtime Supplemental Rate Per Hour: $15.13

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $18.50
Supplemental Benefit Rate per Hour: $14.16
Overtime Wage Rate Per Hour: $27.75
Overtime Supplemental Rate Per Hour: $15.38

Electrician (Fifth Year - Hired before 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $25.80
Supplemental Benefit Rate per Hour: $19.21
Overtime Wage Rate Per Hour: $38.70
Overtime Supplemental Rate Per Hour: $20.83

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $26.30
Supplemental Benefit Rate per Hour: $19.96
Overtime Wage Rate Per Hour: $39.45
Overtime Supplemental Rate Per Hour: $21.61

Electrician (Fifth Year - Hired on or After 5/10/07)

Effective Period: 7/1/2013 - 5/13/2014
Wage Rate per Hour: $22.00
Supplemental Benefit Rate per Hour: $17.30
Overtime Wage Rate Per Hour: $33.00
Overtime Supplemental Rate Per Hour: $18.68

Effective Period: 5/14/2014 - 6/30/2014
Wage Rate per Hour: $22.50
Supplemental Benefit Rate per Hour: $18.05
Overtime Wage Rate Per Hour: $33.75
Overtime Supplemental Rate Per Hour: $19.46

Overtime Description

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: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $26.87

Elevator (Constructor) - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $27.92

Elevator (Constructor) - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $29.38

Elevator (Constructor) - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $30.84

(Local #1)

ELEVATOR REPAIR & MAINTENANCE
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Elevator Service/Modernization Mechanic (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Per Hour: $26.79

Elevator Service/Modernization Mechanic (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Benefit Per Hour: $27.12

Elevator Service/Modernization Mechanic (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Per Hour: $28.43

Elevator Service/Modernization Mechanic (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Per Hour: $29.74

(Local #1)

ENGINEER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)

Engineer - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.49
Supplemental Benefit Rate per Hour: $20.68

Engineer - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $28.11
Supplemental Benefit Rate per Hour: $20.68

Engineer - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.92
Supplemental Benefit Rate per Hour: $20.68

Engineer - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate Per Hour 40% of Journeyperson's Rate
Supplemental Benefit Per Hour: $18.60

Operating Engineer - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's Rate
Supplemental Benefit Per Hour: $18.60

Operating Engineer - Third Year

Effective Period: 7/1/2013 - 6/30/2014
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)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $25.75

Floor Coverer (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $25.75

Floor Coverer (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $25.75

Floor Coverer (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $25.75

(Carpenters District Council)

GLAZIER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Glazier (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $11.97

Glazier (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $21.13

Glazier (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $23.54

Glazier (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $28.34

(Local #1281)

HEAT & FROST INSULATOR
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Heat & Frost Insulator (First Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Heat & Frost Insulator (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Heat & Frost Insulator (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

Heat & Frost Insulator (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #12)

HOUSE WRECKER
(TOTAL DEMOLITION)

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

House Wrecker - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.36
Supplemental Benefit Rate per Hour: $16.35

House Wrecker - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $21.46
Supplemental Benefit Rate per Hour: $16.35

House Wrecker - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.01
Supplemental Benefit Rate per Hour: $16.35

House Wrecker - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.36
Supplemental Benefit Rate per Hour: $16.35

(Local #79)

IRON WORKER - ORNAMENTAL
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Iron Worker (Ornamental) - 1st Four Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $35.78

Iron Worker (Ornamental) 5 - 10 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $36.75

Iron Worker (Ornamental) 11 - 16 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $37.72

Iron Worker (Ornamental) 17 - 22 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $39.66

Iron Worker (Ornamental) 23 - 28 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Rate Per Hour: $40.63

Iron Worker (Ornamental) 29 - 36 Months - Hired on or Before 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Rate Per Hour: $42.57

Iron Worker (Ornamental) - 1st Ten Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $33.84

Iron Worker (Ornamental) - 11 - 16 Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $34.81

Iron Worker (Ornamental) - 17 - 22 Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $35.78

Iron Worker (Ornamental) - 23 - 28 Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $37.72

Iron Worker (Ornamental) - 29 - 36 Months - Hired After 8/1/08

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $39.66

(Local #580)

IRON WORKER - STRUCTURAL
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Iron Worker (Structural) - 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.48
Supplemental Benefit Rate per Hour: $43.87

Iron Worker (Structural) - 7- 18 Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.08
Supplemental Benefit Rate per Hour: $43.87

Iron Worker (Structural) - 19 - 36 months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.68
Supplemental Benefit Rate per Hour: $43.87

(Local #40 and #361)

LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE LAYER & COMMON)
(Ratio Apprentice to Journeyperson: 1 to 1, 1 to 3)

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - First 1000 hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $33.25

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Second 1000 hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $33.25

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Third 1000 hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $33.25

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Fourth 1000 hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Rate Per Hour: $33.25

(Local #731)

MARBLE MECHANICS
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Cutters & Setters - First 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Cutters & Setters - Third 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Cutters & Setters - Fourth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Cutters & Setters - Fifth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Cutters & Setters - Sixth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

Polishers & Finishers - First 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Polishers & Finishers - Third 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Polishers & Finishers - Fourth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 90% of Journeyperson's rate

(Local #7)

MASON TENDER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Mason Tender - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.63
Supplemental Benefit Rate per Hour: $17.06

Mason Tender - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $21.73
Supplemental Benefit Rate per Hour: $17.06

Mason Tender - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.33
Supplemental Benefit Rate per Hour: $17.06

Mason Tender - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.93
Supplemental Benefit Rate per Hour: $17.06

(Local #79)

METALLIC LATHER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Metallic Lather (First Year -Called Prior to 6/29/11)

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $26.23
Supplemental Benefit Rate per Hour: $31.51

Millwright (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $31.00
Supplemental Benefit Rate per Hour: $34.77

Millwright (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $35.77
Supplemental Benefit Rate per Hour: $39.19

Millwright (Fourth Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $45.30

Supplemental Benefit Rate per Hour: $44.63

(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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $26.19
Supplemental Benefit Rate per Hour: $16.20

Paver and Roadbuilder - Second Year (Minimum 1000 hours)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $27.77
Supplemental Benefit Rate per Hour: $16.20

(Local #1010)

PAINTER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Painter - Brush & Roller - First Year

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $15.00
Supplemental Benefit Rate per Hour: $11.38

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $15.80
Supplemental Benefit Rate per Hour: $11.88

Painter - Brush & Roller - Second Year

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $18.75
Supplemental Benefit Rate per Hour: $15.23

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $19.75
Supplemental Benefit Rate per Hour: $15.73

Painter - Brush & Roller - Third Year

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $22.50
Supplemental Benefit Rate per Hour: $18.14

Effective Period: 5/1/2014 - 6/30/2014
Wage Rate per Hour: $23.70
Supplemental Benefit Rate per Hour: $18.64

Painter - Brush & Roller - Fourth Year

Effective Period: 7/1/2013 - 4/30/2014
Wage Rate per Hour: $30.00
Supplemental Benefit Rate per Hour: $23.52

Effective Period: 5/1/2014 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Painters - Structural Steel (Second Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Painters - Structural Steel (Third Year)

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $12.76

Plasterer - First Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: $13.24

Plasterer - Second Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $15.21

Plasterer - Second Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $16.29

Plasterer - Third Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $18.46

Plasterer - Third Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $19.54

(Local #530)

PLUMBER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plumber - First Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $14.00
Supplemental Benefit Rate per Hour: $0.71

Plumber - First Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $14.00
Supplemental Benefit Rate per Hour: $2.96

Plumber - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $17.96
Supplemental Benefit Rate per Hour: $16.25

Plumber - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.06
Supplemental Benefit Rate per Hour: $16.25

Plumber - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.91
Supplemental Benefit Rate per Hour: $16.25

Plumber - Fifth Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.31
Supplemental Benefit Rate per Hour: $16.25

Plumber - Fifth Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $36.38
Supplemental Benefit Rate per Hour: $16.25

(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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $25.00
Supplemental Benefit Rate per Hour: $3.64

Pointer - Waterproofer, Caulker Mechanic - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $27.25
Supplemental Benefit Rate per Hour: $8.59

Pointer - Waterproofer, Caulker Mechanic - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $32.23
Supplemental Benefit Rate per Hour: $11.34

Pointer - Waterproofer, Caulker Mechanic - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $38.66
Supplemental Benefit Rate per Hour: $11.34

(Bricklayer District Council)

ROOFER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Roofer - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 35% of Journeyperson's Rate

Roofer - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

Roofer - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's Rate

Roofer - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
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 - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 30% of Journeyperson's rate
Supplemental Rate Per Hour: $15.37

Sheet Metal Worker - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Rate Per Hour: $18.24

Sheet Metal Worker - Third Year (1st Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $20.06

Sheet Metal Worker - Third Year (2nd Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: $21.87

Sheet Metal Worker - Fourth Year (1st Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $23.69

Sheet Metal Worker - Fourth Year (2nd Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $25.33

Sheet Metal Worker - Fifth Year (1st Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $27.47

Sheet Metal Worker - Fifth Year(2nd Six Months)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $31.23

(Local #28)

SIGN ERECTOR
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Sign Erector - First Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Rate Per Hour: $5.96

Sign Erector - First Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $6.75

Sign Erector - Second Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: $7.55

Sign Erector - Second Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $8.34

Sign Erector - Third Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $9.13

Sign Erector - Third Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $9.92

Sign Erector - Fourth Year: 1st Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $10.72

Sign Erector - Fourth Year: 2nd Six Months

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $11.51

Sign Erector - Fifth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $12.30

Sign Erector - Sixth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $12.30

(Local #137)

STEAMFITTER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Steamfitter - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Per Hour: 40% of Journeyperson's rate

Steamfitter - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Rate Per Hour: 50% of Journeyperson's rate.

Steamfitter - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Rate per Hour: 65% of Journeyperson's rate.

Steamfitter - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Rate Per Hour: 80% of Journeyperson's rate.

Steamfitter - Fifth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate and Supplemental Rate Per Hour: 85% of Journeyperson's rate.

(Local #638)

STONE MASON - SETTER
(Ratio Apprentice of Journeyperson: 1 to 1, 1 to 2)

Stone Mason - Setters - First 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Second 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Third 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
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: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Drywall Taper - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Drywall Taper - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #1974)

TILE LAYER - SETTER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Tile Layer - Setter - First 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Tile Layer - Setter - Second 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Tile Layer - Setter - Third 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Tile Layer - Setter - Fourth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Tile Layer - Setter - Fifth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Tile Layer - Setter - Sixth 750 Hours

Effective Period: 7/1/2013 - 6/30/2014
Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

(Local #7)

TIMBERPERSON
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Timberperson - First Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Rate Per Hour: $30.04

Timberperson - Second Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $30.04

Timberperson - Third Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $30.04

Timberperson - Fourth Year

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $30.04

(Local #1536)

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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).

Contracting agencies that anticipate doing work that may require building service trades or classifications not included in this schedule may request the Comptroller to establish a proper classification and wage determination for the work. Contractors using trades and/or classifications for which the Comptroller has not promulgated wages and benefits do so at their own risk.

Contractors are advised to review the applicable Comptroller's Prevailing Wage Schedule before bidding on public work. Any Prevailing Wage Rate error made by the Contracting Agency, whether in a contract document or other communication, will not preclude a finding against the contractor of a prevailing-wage violation.

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 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 require 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.

Answers to questions concerning prevailing trade practices may be obtained from the Classification Unit by calling (212) 669-7974. 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.

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.

Benefits are paid for *EACH HOUR WORKED* unless otherwise noted.

CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
JOHN C. LIU

BUREAU OF LABOR LAW

Office of the Comptroller
BUREAU OF LABOR LAW

MUNICIPAL BUILDING
ONE CENTRE STREET, ROOM 1120
NEW YORK, N.Y. 10007-2341

TEL: (212) 669-4443
FAX: (212) 669-4002

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").

Wasyl 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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $11.37
Supplemental Benefit Rate per Hour: $5.57

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: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $25.10
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.55
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "A" Foreperson, Starter (Over 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $24.99
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.44
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "A" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Over 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $22.97
Supplemental Benefit Rate per Hour: $9.51
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

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: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $23.42
Supplemental Benefit Rate per Hour: $9.91
Supplemental Note: for new employee 0-12 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.

Office Building Class "B" Handyperson (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $25.07
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.52
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "B" Foreperson, Starter (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $24.95
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.40
Supplemental Benefit Rate per Hour: $9.91

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: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $22.94
Supplemental Benefit Rate per Hour: $9.51
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

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: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $23.39
Supplemental Benefit Rate per Hour: $9.91
Supplemental Note: for new employee 0-12 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.

Office Building Class "C" Handyperson (Less than 120,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $25.02
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.47
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "C" Foreperson, Starter (Less than 120,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $24.91
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $25.36
Supplemental Benefit Rate per Hour: $9.91

Office Building Class "C" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Less than 120,000 square feet gross area)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $22.90
Supplemental Benefit Rate per Hour: $9.51
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

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: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $23.35
Supplemental Benefit Rate per Hour: $9.91
Supplemental Note: for new employee 0-12 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.

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 Class "A" Handyperson

Residential Buildings Class "A": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of over $4000.00 a room.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.57
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: Effective 1/1/2014 - $9.83

Residential Building Class "A" Cleaner/Porter

Residential Buildings Class "A": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of over $4000.00 a room.

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $21.34
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Porter/Cleaner, 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: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $21.34
Supplemental Benefit Rate per Hour: $9.83
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Porter/Cleaner, 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.

Residential Building Class "B" Handyperson

Residential Building Class "B": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of over $2000.00 a room and not over $4000.00 a room.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.51
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: Effective 1/1/2014 - $9.83

Residential Building Class "B" Cleaner/Porter

Residential Building Class "B": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of over $2000.00 a room and not over $4000.00 a room.

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $21.28
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Porter/Cleaner, 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: 1/1/2014 - 6/30/2014

Wage Rate per Hour: $21.28
Supplemental Benefit Rate per Hour: $9.83
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Porter/Cleaner, 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.

Residential Building Class "C" Handyperson

Residential Building Class "C": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of $2000.00 or less a room.

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $23.45
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: Effective 1/1/2014 - $9.83

Residential Building Class "C" Cleaner/Porter

Residential Building Class "C": buildings where the assessed value of the land and building, based upon the 1935 assessment, divided by the number of rooms in the building, gives an assessed value of $2000.00 or less a room.

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $21.23
Supplemental Benefit Rate per Hour: $9.43
Supplemental Note: for new employee 0-12 months of employment - $6.92; for new employee 13-24 months of employment - $9.18

NEW HIRE: Porter/Cleaner, 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: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $21.23
Supplemental Benefit Rate per Hour: $9.83
Supplemental Note: for new employee 0-12 months of employment - $7.22; for new employee 13-24 months of employment - $9.58

NEW HIRE: Porter/Cleaner, 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.

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
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: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $35.18
Supplemental Benefit Rate per Hour: $15.78

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $36.73
Supplemental Benefit Rate per Hour: $16.35

Fireperson

Fireperson (Helper): Assist the Engineer

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $27.39
Supplemental Benefit Rate per Hour: $15.41

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $28.60

Supplemental Benefit Rate per Hour: $15.97

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.

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $11.20
Supplemental Benefit Rate per Hour: $1.72

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)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $30.61
Supplemental Benefit Rate per Hour: $20.42

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (4th Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $28.00
Supplemental Benefit Rate per Hour: $20.42

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (3rd Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $26.00
Supplemental Benefit Rate per Hour: $20.42

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (2nd Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $24.00
Supplemental Benefit Rate per Hour: $20.42

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (1st Year)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.00
Supplemental Benefit Rate per Hour: $20.42

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

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $17.16
Supplemental Benefit Rate per Hour: $1.72

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $19.63
Supplemental Benefit Rate per Hour: $6.20

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $18.00
Supplemental Benefit Rate per Hour: $9.34

Helper

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $14.25
Supplemental Benefit Rate per Hour: $9.34

Tractor Trailer Driver

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $20.50
Supplemental Benefit Rate per Hour: $9.34

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

Tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW)

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $22.57
Supplemental Benefit Rate per Hour: $4.49

Light Truck Driver

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $19.81
Supplemental Benefit Rate per Hour: $4.49

Laborer and Freight, Stock, and Material Movers, Hand

Effective Period: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $17.51
Supplemental Benefit Rate per Hour: $4.49

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: 7/1/2013 - 6/30/2014
Wage Rate per Hour: $29.27
Supplemental Benefit Rate per Hour: $4.49

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: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $28.00
Supplemental Benefit Rate per Hour: $4.90
Supplemental Note: for new employee 0-30 days of employment - $4.26; for new employee 31-120 days of employment - $4.43; for new employee 121 days - 2 years of employment - $4.54

Effective Period: 1/1/2014 - 6/30/2014
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

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: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $12.85
Supplemental Benefit Rate per Hour: $4.54
Supplemental Note: for new employee 0-30 days of employment - $4.26; for new employee 31-120 days of employment - $4.43

Effective Period: 1/1/2014 - 6/30/2014
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

Security Guard (Unarmed) 7 - 12 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $13.35
Supplemental Benefit Rate per Hour: $4.54

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $13.60
Supplemental Benefit Rate per Hour: $4.63

Security Guard (Unarmed) 13 - 18 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $13.85
Supplemental Benefit Rate per Hour: $4.54

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $14.10
Supplemental Benefit Rate per Hour: $4.63

Security Guard (Unarmed) 19 - 24 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $14.35
Supplemental Benefit Rate per Hour: $4.54

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $14.60
Supplemental Benefit Rate per Hour: $4.63

Security Guard (Unarmed) 25 - 30 months

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $14.85
Supplemental Benefit Rate per Hour: $4.90

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $15.10
Supplemental Benefit Rate per Hour: $5.02

Security Guard (Unarmed) 31 months or more

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $15.15
Supplemental Benefit Rate per Hour: $4.90

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $15.60
Supplemental Benefit Rate per Hour: $5.02

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: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $26.44
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $26.90
Supplemental Benefit Rate per Hour: $9.91

Power Operated Scaffolds, Manual Scaffolds, and Boatswain Chairs

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $28.69
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $29.27
Supplemental Benefit Rate per Hour: $9.91

Window Cleaner Apprentice (0 - 3 months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $19.59
Supplemental Benefit Rate per Hour: None

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $19.92
Supplemental Benefit Rate per Hour: None

Window Cleaner Apprentice (4 - 7 months)

Employee must be a registered apprentice with the New York State Department of Labor

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $21.18
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $21.54
Supplemental Benefit Rate per Hour: $9.91

Window Cleaner Apprentice (8 - 11 months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $22.44
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $22.82
Supplemental Benefit Rate per Hour: $9.91

Window Cleaner Apprentice (12 - 15 months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $23.72
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014
Wage Rate per Hour: $24.12
Supplemental Benefit Rate per Hour: $9.91

Window Cleaner Apprentice (16 - 17 months)

Effective Period: 7/1/2013 - 12/31/2013
Wage Rate per Hour: $25.01
Supplemental Benefit Rate per Hour: $9.51

Effective Period: 1/1/2014 - 6/30/2014

Wage Rate per Hour: $25.44
Supplemental Benefit Rate per Hour: $9.91

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

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)

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SECTION 01000

GENERAL CONDITIONS

APPLICABLE TO ALL CONTRACTS

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Table of Contents

Section 01000 - General Conditions

The ADDENDUM TO THE GENERAL CONDITIONS is contained in Volume 3 of the Contract Documents. Volume 3 contains the following:

- Addendum to the General Conditions
- Specifications

SECTION 01000
GENERAL CONDITIONS

PART 1 - GENERAL

1.01 Applicability of General Conditions

A. Since there are several separate Contracts pertaining to the construction of this project, for convenience, the General Conditions are stated only once. These General Conditions are applicable to all Contracts and shall constitute an integral part of each separate Contract to the same extent as though they were repeated in full therein.

B. The Contractor is advised that various sections of these General Conditions are amended by the Addendum to the General Conditions. This Addendum also includes various schedules referred to in these General Conditions (Schedules A through F). These schedules contain important information that is specific to this project. The Addendum, including Schedules A through F, is set forth in Volume 3 of the Contract Documents.

C. Throughout these General Conditions, various responsibilities and obligations are assigned to each of the following four Contractors: (1) General Construction, (2) Plumbing, (3) Heating/Ventilating/Air-Conditioning/Fire Protection, and (4) Electrical. 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 which is included in the Project. The Addendum to the General Conditions specifies which Contractor shall perform the responsibilities and obligations of each omitted contract, as set forth in the General Conditions.

1.02 Scope and Intent

A. DESCRIPTION OF PROJECT - Refer to the Addendum to the General Conditions for a description of this project.

B. PROGRESS SCHEDULE

1. Within 15 days after the Notice to Proceed, the Contractor for General Construction Work shall prepare a composite Job Progress Chart that shall indicate graphically and chronologically the time the various parts of the work of all Contracts shall commence and be completed. The Chart shall be in a reproducible form approved by the Commissioner.

2. Immediately after the Notice to Proceed of their Contracts, the Contractors for Plumbing Work, Heating, Ventilating and Air Conditioning Work (HVAC) and Electrical Work, as applicable, shall furnish all necessary data to the Contractor for General Construction Work, and cooperate in all respects in connection with formulation of the Chart.

3. The Chart shall show the sequence and interrelationship of each operation of all the Contracts.

4. The Chart shall show the estimated time for fabrication and/or delivery of all materials and equipment required for the work.

5. As directed by the Resident Engineer, the Contractors shall meet with each other and with the Resident Engineer to review and make the necessary adjustments to the composite Job Progress Chart, and to coordinate the work indicated thereon. (Article 12 of the Contract).

6. When completed, the Job Progress Chart shall be signed and dated by each Contractor or their official representative. The Resident Engineer is authorized to sign the Chart for the Department of Design and Construction. Thereafter, the Chart shall be modified only with the Commissioner's approval. When directed by the Commissioner, the Chart shall be revised and updated. If necessary, a new revised Chart shall be prepared in the same manner as outlined above for the original Chart.

7. The approved Chart shall be distributed by the Contractor for General Construction Work, as follows: the original and two (2) copies to the Resident Engineer, two (2) copies to each Contractor, and two (2) copies to the Department of Design and Construction

8. All Contractors shall consult the approved Progress Chart and install their work within the time limits indicated on the Chart.

9. The Resident Engineer shall post in a prominent place in the field office a copy of the Chart and mark thereon the progress of the work, including the times when various parts of the work commenced and were completed.

C. COMPLETION OF WORK - Work to be done under each separate Contract comprises the furnishing of all labor, materials, equipment and other appurtenances and obtaining of all regulatory agency approvals necessary and required to complete the construction work in accordance with the Contract.

D. 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 the Contractor as though it were originally delineated or described. Such work is deemed included in the Bid Price.

E. 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 the Contractor. Such work is deemed included in the Bid Price.

F. 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.

G. CONFLICT BETWEEN CONTRACT DRAWINGS AND SPECIFICATIONS - Should any conflict occur in or between the Drawings and Specifications, the Contractor shall be deemed to have estimated on the most expensive way of doing the work unless the 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.

H. 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 therein, 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 arising as to possible or alleged interference between the various Contractors which may retard the progress of the work, the dispute shall be adjudicated by the Commissioner, whose decision as to the party or parties at fault and as to the manner in which the matter may be adjudicated, shall be binding and conclusive on all parties.

I. "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.

J. "APPROVED," ETC. - "Approved," "acceptable," "satisfactory," and words of similar import shall mean and intend approved, acceptable or satisfactory to the Commissioner.

K. CONFLICTS OF INTERESTS - The Charter of the City of New York, Section 2604, provides a number of safeguards in relation to conflicts of interest. Such safeguards include, without limitation, the following: "No public servant shall receive compensation except from the City for performing any official duty or accept or receive any gratuity from any person whose interest may be affected by the

public servant's official action."

1. Other sections of the City Charter, the Administrative Code and the Penal Law are applicable in implementing the basic Conflicts of Interest Section and under certain circumstances penalties may be invoked against the donor as well as the recipient of any form of valuable gift.

2. Notice is hereby given that sections of the City Charter, the Administrative Code and the Penal Law alluded to herein shall apply under the terms of this Contract to circumstances relevant to conflicts of interest and shall be extended in application to subcontractors authorized to perform work, labor and services pursuant to this Contract and further, it shall be the duty and responsibility of the Contractors to so inform their respective subcontractors.

1.03 Provisions Referenced in the Contract

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 to the General Conditions, sets forth 1) the referenced Articles of the Contract, and 2) the specific requirements applicable to each respective Contract.

B. 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. The Contractor shall submit to the Commissioner a written request, in quadruplicate, for payment for materials purchased or to be purchased for which the Contractor needs 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 therefor.

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 and Specifications, the Contractor shall remove and replace, at Contractor's own cost, such defective or improperly incorporated material with materials complying with the Contract and Specifications. 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 Contract 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 therefor 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. EXCISE AND TRANSPORTATION TAXES- Pursuant to Section 6 of the "Information for Bidders", the Contractor may be exempted from the payment of Federal Excise and Transportation Taxes in accord with the following:

1. Excise Tax Exemption Certificate will be certified by the Department of Design and Construction where requested by the Contractor, for items which fall within the scope of the Contract and which may be exempt from Federal Excise Tax.

2. TRANSPORTATION TAX - The 3% Federal Tax has been repealed and is hereby deleted from the Contract. The 10% Federal Tax for travel remains in effect.

E. CORRESPONDENCE - There shall be six (6) copies of all letters of correspondence to the Department of Design and Construction. An additional copy of all correspondence shall be sent directly to the Resident Engineer at the job site.

F. MOBILIZATION PAYMENT - A line item for mobilization shall be allowed on the Contractor's Detailed Estimate 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 Estimate 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			=	$ 6,000				
$ 100,001 -	$	500,000	x	6	=	$ 6,000	(min)	- $	30,000	(max)

$ 500,001 -	$ 2,500,000	x	5	=	$	30,000	(min)	-	$	125,000	(max)
Over	$ 2,500,000	x	4	=	$	125,000	(min)	-	$	300,000	(max)

The Contractor may requisition for one-half (1/2) of the Mobilization Payment upon satisfactory completion of the following:

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.

1.04 Contract Drawings

A. SCHEDULE C - The Contract Drawings are listed in Schedule C, which is set forth in the Addendum to the General Conditions. Such drawings referred to in the Contract, and in the applicable Specifications for the various Contracts bear the general title:

City of New York
Department of Design and Construction
Division of Structures

B. DOCUMENTS FURNISHED TO THE CONTRACTOR - After the award of the Contract, the Contractor for General Construction Work will be furnished with five (5) sets of paper prints of all Contract Drawings mentioned in Paragraph A above.

C. PRINTS **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

Each Contractor, other than the Contractor for General Construction Work referred to in Paragraph B, will receive two (2) sets of paper prints of all Drawings listed in Paragraph A and three (3) sets of paper prints of all Contract Drawings applying directly to each Contractor's own Contract.

D. Each Contractor will receive nine (9) complete sets of Specifications.

E. ADDITIONAL COPIES of Drawings and Specifications, when requested, will be furnished to the Contractor if available.

F. COORDINATION AND COOPERATION - Since the Contracts are all related to the project, the Contractor shall consult and study the requirement of the Contract Drawings and Specifications of all Contracts furnished to the Contractor, 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.

G. 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.

H. COMPENSATION - Where Supplementary Drawings entail extra work, compensation therefor to the Contractor shall be subject to the terms of the "Contract". The Supplementary Drawings shall be binding upon the Contractor with the same force as the Contract Drawings.

I. SUPPLEMENTARY DRAWING PRINTS - Three (3) copies of prints of these Supplementary Drawings will be furnished to the Contractor.

J. COPIES TO SUBCONTRACTORS - The Contractor shall furnish each of its subcontractors and material suppliers such copies of Contract Drawings, Supplementary Drawings, or copies of the Specifications as may be required for its work.

K. CONTRACTOR TO CHECK DRAWINGS - The 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 the Contractor proceeds with any work. Figures shall be used in preference to scale dimensions and large-scale drawings in preference to small-scale drawings.

1.05 Shop Drawings and Record Drawings

A. SHOP DRAWINGS

1. SUBMISSION OF SHOP DRAWINGS - For instructions relative to Shop Drawings involving electrical or mechanical work or equipment of any nature called for in any Contract, see the General Electrical Requirements and the General Mechanical Requirements.

2. SHOP DRAWINGS - The Contractor shall promptly prepare and submit layout detail and Shop Drawings of such parts of the work as are indicated in the Specifications 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 preferably be on sheets of the same size as the Contract Drawings, 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 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 thicknesses and finishes.

   e. All other information 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 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.

NOTE: In addition to the above requirements, the Shop Drawings shall bear a stamp having the following wording:

FIELD MEASUREMENTS - The Contractor certifies that it has verified and supplemented the Contract Drawings by taking all required field measurements, that said measurements correctly reflect all field conditions and that this Shop Drawing incorporates said measurements.

6. THE SUBMISSION OF SHOP DRAWINGS - The Shop Drawings shall be accompanied by a letter of transmittal, in triplicate, containing the name of the Project, the name of the Contractor, the number of Drawings, titles and any other requirements. Re-submission of the same drawings shall bear the original number of the drawings and the original titles.

7. PRELIMINARY SUBMISSION - The Contractor shall submit one (1) set of sepia Shop Drawings to the Consultant Architect/Engineer for their approval. A satisfactory Shop Drawing will be stamped "Approved", be dated and one (1) copy thereof will be returned to the Contractor by letter. Should the Shop Drawing not be approved by the Consultant Architect/Engineer, the Commissioner will return the sepia Shop Drawings with the necessary corrections and changes to be made as indicated thereon.

8. REVISIONS - The Contractor must make such corrections and changes and again submit one (1) set of sepia drawings for the approval of the Consultant Architect/Engineer. The Contractor shall revise and resubmit the Shop Drawing as required by the Consultant Architect/Engineer until approval thereof is obtained. However, Shop Drawings which have been stamped "Approved As Noted" shall be considered an "Approved" Shop Drawing and NEED NOT be revised and resubmitted.

   No work called for by the Shop Drawings shall be done until the approval of the said drawings by the Consultant Architect/Engineer is given. In addition to the foregoing Shop Drawing transmissions, a copy of any Shop Drawing prepared by any of the Contractors which Shop Drawing indicated work related to, adjacent to, impinging upon, or affecting work to be done by other Contractors, shall be transmitted to the Contractors so affected. These approved Shop Drawings shall be delivered to the Resident Engineer for distribution to the affected Contractors at the job meetings and shall be so recorded in the minutes.

9. FINAL SUBMISSION - When approval of any Shop Drawing is obtained by the Contractor, it shall insert the date of the approval of the drawing and promptly furnish the Consultant Architect/Engineer with eight (8) additional prints of the approved Drawings. No work called for by the Shop Drawings shall be performed until the approval of the said drawings by the Commissioner is given. In addition to the foregoing Shop Drawing transmissions, a copy of any Shop Drawing prepared by any of the Contractors which indicates work related to, adjacent to, impinging upon, or affecting work to be done by other Contractors, shall be transmitted to the Contractors so affected. These approved Shop Drawings shall be delivered to the Resident Engineer for distribution to the affected Contractors at the job meetings and shall be so recorded in the minutes.

10. 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. Approval of the Shop Drawings shall constitute approval of the subject matter thereof only and not of any structural apparatus shown or indicated.

11. CATALOGUE CUTS - Except as otherwise prescribed herein, the submission of catalogue cuts shall conform to the procedures specified for Shop Drawings.

    a. PRELIMINARY SUBMISSION - The Contractor shall submit three (3) sets of catalogue cuts to the Consultant Architect/Engineer to approve. A satisfactory catalogue cut will be stamped

"Approved", be dated and one (1) copy thereof will be returned to the Contractor by letter. Should the catalogue cut not be approved by the Commissioner, the Commissioner will return one (1) set of such catalogue cuts with the necessary corrections and changes to be made indicated thereon.

b. REVISIONS - The Contractor shall make such corrections and changes and again submit four (4) sets of the catalogue cuts, in duplicate, for the approval of the Commissioner. The Contractor shall revise and resubmit the catalogue cuts as required by the Consultant Architect/Engineer until approval thereof is obtained.

However, catalogue cuts which have been stamped "Approved As Noted" shall be considered an "Approved" catalogue cut and need not be revised and resubmitted.

c. FINAL SUBMISSION - When approval of any catalogue cut is obtained by the Contractor, it shall insert the date of the approval and promptly furnish the Consultant Architect/Engineer with four (4) additional sets of the approved catalogue cuts.

12. RESPONSIBILITY OF 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.

13. SHOP DRAWINGS AND MATERIAL SAMPLES SCHEDULE – The Shop Drawings and Material Samples Schedule is set forth in Schedule F, which is included in the Addendum to the General Conditions. Completion of this Schedule shall be in accordance with Article 1.41 (A) of these General Conditions.

14. PROCEDURE FOR PREPARING, FORWARDING, CHECKING AND RETURN - of all Shop Drawings shall be, generally, as follows:

The Contractor shall make available to its subcontractors the necessary Contract Documents and have them determine dimensions and conditions in the field, particularly with reference to coordination with other trades or work under other Contractors. The Contractor shall direct its subcontractors to prepare Shop Drawings for submission to the Consultant Architect/Engineer 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:

a. Review and be responsible to the Commissioner, or the Commissioner's authorized representative, for information shown on subcontractor's Shop and Installation drawings and manufacturers' date, and also for conformity to Contract Documents.

b. "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.

c. Clearly designate which trade 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 Consultant Architect/Engineer.

d. Stamp submissions "Recommended for Approval", date and forward to the Commissioner or the Commissioner's authorized representative.

In order to expedite Shop Drawing procedures, the Contractor shall write a Shop Drawing status letter directly to the Consultant Architect/Engineer, each week, containing the following subject matter:

(1) A list of all Shop Drawings which have been sent to but not returned by the Architect or Engineer giving name of the subcontractor, drawing number, title and date of submission.

(2) An indication of the desired priority of the return, if necessary.

NOTE: The status letter shall be prepared and sent at a given time each week, preferably Friday afternoon, to enable the Consultant Architect/Engineer to receive the letter on Monday morning. This procedure shall be maintained throughout the active Shop Drawing period of construction.

B. INTEGRATED DRAWINGS **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

1. The Contractor for General Construction Work shall provide to the Contractor for Heating, Ventilating and Air Conditioning Work reflected ceiling starting points or plans, beam soffit elevations, ceiling heights, roof openings, etc.

2. The Contractor for Heating, Ventilating and Air Conditioning Work shall prepare a drawing or drawings showing ductwork, heating and sprinkler piping. This drawing shall include location of grilles, registers, etc. and access doors in hung ceilings. Locations shall be fixed by elevations and dimensions from column center lines and/or walls.

3. The Contractor for Heating, Ventilating and Air Conditioning Work shall prepare and distribute to each of the other Contractors, the Resident Engineer and to the Consultant Architect a sepia of the above.

4. The Contractor for General Construction Work shall lay out on its sepia, the reflected ceiling plan, beam soffit elevations, ceiling heights, roof openings, etc.

5. The Contractor for Plumbing Work shall lay out its piping, valves, cleanouts, etc., indicating locations and elevations and shall indicate the necessary access doors.

6. The Contractor for Electrical Work shall indicate its fixtures, large conduit runs, clearances, pull boxes, junction boxes, sound system speakers, etc.

7. The Resident Engineer will call as many meetings with the Contractors as are necessary to resolve any conflicts that become apparent. The Resident Engineer will call on the services of the Consultant Engineer or Architect where necessary. The Resident Engineer is responsible for the coordination of the Contract Drawings.

8. Upon resolution of the conflicts, each Contractor shall enter its own work on the Resident Engineer's sepia, which will become the Master or Integrated Drawing. The Master Sepia shall be signed by each Contractor to indicate its acceptance of the arrangement of the work.
9. A reproducible copy of the Master Integrated Drawing or Drawings will be prepared and distributed by the Contractor for Heating, Ventilating and Air Conditioning Work to each Contractor and to the Consultant Architect for information.

10. Each Contractor shall prepare its Shop Drawings in accordance with the Integrated Drawings. No work will be permitted without approved Shop Drawings. It is therefore essential that this procedure be instituted as quickly as possible.

11. Contractors shall be held strictly accountable for cooperation in preparing the Integrated Drawing or Drawings.

C. RECORD DRAWINGS

1. 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 Document mylars pertaining to the work to be performed under its 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. The Contractor is required to furnish all other mylar drawings if necessary such as Addenda Drawings and Supplementary Drawings as may be necessary to indicate all work in detail as actually completed.

   NOTE TO CONTRACTOR: All professional seals must be blocked out. Title box complete with project title and Consultants' names will remain.

2. Each Contractor shall maintain, during the progress of the work, an accurate record of the work as actually installed, on Record Drawings, on mylar, in ink. These Record Drawings shall be made available to the Resident Engineer upon request.

   The Contractor's attention is particularly directed to the necessity of keeping accurate records of all subsurface and concealed work, so that the Record Drawings may contain this information in exact detail and location. Record Drawings should also show all connections, valves, gates, switches, cut-outs and similar operating equipment.

   Before substantial completion payment, each Contractor shall furnish to the Commissioner one (l) complete set of mylar 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 sponsoring agency by Department of Design and Construction.

3. 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 Record Drawing shall bear the legend "RECORD DRAWING" in heavy block lettering, one half (l/2) inch high, and contain the following data:

   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 Record Drawings, which shall contain the following:

   a. Heading:
      The City of New York
      Department of Design and Construction
      Division of Structures

   b. Capital Budget Project Number (CAPIS 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

6. All changes from Contract Drawings shall be distinctly encircled and identified by Change Order number correlating to changes listed on the "Title Sheet." The Contractor shall show within the encircled areas the work as actually installed.

7. BULLETINS, OPERATING AND SERVICE MANUALS - Where the Contractor has submitted prints in the form of technical bulletins, operating and service manuals, or other printed matter as a Shop Drawing, having diagrams or drawings thereon of a material or equipment installed in the work, the Contractor shall furnish three (3) sets thereof so that the Commissioner may have all the necessary information for the proper operation maintenance and repair of the material and equipment and the ordering of spare parts. All bulletins and operating and service manuals shall be compiled and indexed in book form for each Contract.

1.06 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 Building Code of the City of New York, 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.

C. REPUTE OF MANUFACTURER - No manufacturer will be approved for any materials to be furnished under the Contract unless it shall be of good reputation, shall have a plant of ample capacity and shall have successfully produced similar products. All required approvals for legal use of materials and equipment such as B.S.A. and M.E.A. must be obtained prior to installation.

D. ALL MATERIALS - fixtures, fittings, supplies and equipment furnished under the Contract shall be new and unused, except as approved by the Agency, 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.

E. 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.

F. STANDARD REFERENCES - Whenever reference is made to the furnishing of materials or testing thereof to conform to the standards of any technical society, organization or body, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the date of advertisement for bids, even though reference has been made to an earlier standard.

G. REFERENCES - Reference to a technical society, organization or body may be made in the Specifications by abbreviations in accordance with the following list:

A.I.A. for American Institute of Architects

A.C.I.	for American Concrete Institute
A.G.A.	for American Gas Association
A.G.M.A.	for American Gear Manufacturer Association
A.I.E.E.	for American Institute of Electrical Engineers
A.I.S.C.	for American Institute of Steel Construction
A.S.A.	for American Standards Association
A.S.T.M.	for American Society for Testing Materials
A.W.S.C.	for American Welding Society Code
A.W.W.A.	for American Water Works Association
B.S.& A.	for New York City Board of Standards & Appeals
C.I.P.R.A.	for Cast Iron Pipe Research Association
B.G.& E.	for Bureau of Gas & Electricity of the City of New York
FED. SPEC.	for Federal Specification
I.P.C.E.A.	for Insulated Power Cable Engineer's Association
NAVY SPEC.	for Navy Department Specification
N.E.C.	for National Electric Code
N.E.M.A.	for National Electrical Manufacturers Association
N.Y.B.C.	for New York City Building Code
N.Y.E.C.	for New York City Electrical Code
N.Y. SPEC.	for New York City Department of Purchase Specification
P.P.S.	for Power Piping Society
S.A.E.	for Society of Automotive Engineers Standards
S.H.B.I.	for Steel Heating Boiler Institute

H. 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.

I. SAMPLES OF MATERIALS - The Contractor shall submit to the Commissioner for approval, samples of all materials specified to be used in the project.

1. For samples of materials involving electrical work of any nature, see the 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. However, in addition thereto, after approval, three (3) additional samples showing the material, color and texture of all interior finishes, including the finishes of exposed built-in equipment, trim, glazing, fittings and fixtures, etc., shall also be furnished. The sizes of these additional samples shall be as directed by and acceptable to the Commissioner.

3. Each of the samples shall be labeled, bearing the name and quality of the material, the Contractor's name, date, Contract and project, and the related Specification or Contract Drawing reference to the samples submitted.

4. A letter of transmittal, in triplicate, from the Contractor requesting approval must accompany all such samples.

5. Transportation charges to the Commissioner's office must be prepared on all samples forwarded.

6. Samples for testing purposes shall be as required in the Specifications.

J. SAMPLES ON DISPLAY - When samples are specified to be equal to samples in the office of the Commissioner, they shall be carefully examined by the bidders and by those whom the bidder expects to employ for the furnishing of such materials.

K. 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 approval is received, in writing, from the Commissioner. All materials shall be furnished equal in every respect to the approved samples.

L. THE APPROVAL 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 Commissioner, 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 Commissioner, for the project.

M. ACCEPTIBILITY OF TEST DATA - The Commissioner will be the final judge as to acceptability of laboratory test data and performance in service of materials submitted.

N. 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.

O. EQUIVALENT QUALITY OF MATERIALS - All materials and equipment which are designated in the Specifications by a number in the catalogue of any manufacturer or by a manufacturer's grade or trade name, are designated for the purpose of describing the article and fixing the standard or the quality and finish. Materials and equipment, which are, in the opinion of the Commissioner, the equivalent to that specified, will be acceptable.

P. The submission of any material, or article, as the equal of the materials or articles set forth in the Specifications as a standard shall be accompanied by illustrations, drawings, descriptions; catalogues, records of tests, samples and any and all other information essential for judging the equality to the materials, finish and durability of that specified as standard, as well as information indicating satisfactory use under similar operating conditions.

Q. 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.

R. COMMISSIONER TO SELECT INSPECTORS - Except as specifically provided in the Specifications, the Commissioner will select and designate all persons, firms, or corporations to make or witness each and every inspection, test or analyses, with or without reports.

S. 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.

T. NO SHIPPING BEFORE INSPECTION - The Contractor shall comply with the foregoing before shipping any material.

U. 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.

V. 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.

W. 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.

X. 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.

Y. 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 without cost to the City.

Z. FURNISH DESIGNATED MATERIAL - 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.

AA. COST OF TESTS BORNE BY CITY - Where the City directs test 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.

BB. COST OF TESTS BORNE BY CONTRACTOR - Where tests are specifically called for in the Specifications to be made by the Contractor, 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 the making of tests on materials and equipment submitted by the Contractor as the equivalent of that specifically named in the Specifications and rejected for non-compliance.

1.07 Delivery of Materials

A. MATERIAL ORDERS - The 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 - The 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. THE CONTRACTOR SHALL COORDINATE DELIVERIES - in order to avoid delaying or impeding the progress of the work of any related Contractor.

E. 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.

F. 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.

G. 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.

1.08 Temporary Structures

A. FIELD OFFICE FOR CONTRACTOR - The 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. TELEPHONE ARRANGEMENTS - Arrangements shall be made by the Contractor whereby its representative may be readily accessible by telephone.

E. MATERIAL SHEDS - used by the 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.

F. SUBSTANTIAL CONSTRUCTION - All temporary structures shall be of substantial construction and neat appearance, and shall be painted a uniform gray unless otherwise directed by the Commissioner.

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.

H. CONTRACTOR'S SIGN - The 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.

1.09 Surveys (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

A. LINE AND GRADE - The City will establish a baseline and bench mark near the site of the work for use of the Contractor in connection with the performance of the work.

B. RESPONSIBILITY - The 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 the 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 MARKS - 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 Contractor for General Construction Work 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 Contractor for General Construction Work shall establish the permanent lines of exterior walls. Such 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 Contractor for General Construction Work 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 licensed Surveyor and shall be subject to the approval of the Commissioner. The Surveyor shall not be a regular employee of the Contractor, nor shall the Surveyor have any interest in the Contract. The Surveyor shall not be employed by the 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 Contractor for General Construction Work 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.

1.10 Contractor's Superintendent

A. SUPERINTENDENT - The 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 Superintendent competent and capable of maintaining proper supervision and care of the work and acceptable to the Commissioner, who, in the absence of the 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 - The Contractor's Superintendent on the job shall not be changed or removed without the consent of the Commissioner.

1.11 Permits

The 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. The Contractor shall be responsible for all costs in connection with such regulatory compliance, unless otherwise specified in the Contract.

1.12 Transportation

A. AVAILABILITY - It shall be the duty of the 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 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, the 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 the Contractor of such facilities.

1.13 Sleeves And Hangers (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

A. COORDINATE TO PROGRESS SCHEDULE - Contractors required to furnish and install conduits, outlets, piping sleeves, boxes, inserts and all other materials and equipment necessary to be built into the work to be performed by the Contractor for General Construction Work, shall promptly furnish and set such sleeves or other materials in conformity with the requirements of the project.

B. COOPERATION OF CONTRACTORS - All Contractors 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 Contractor for General Construction Work 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 Contractor for General Construction Work 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.

1.14 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. 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 article on REMOVAL OF RUBBISH AND SURPLUS MATERIALS.

1.15 Temporary Heat (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

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 Paragraph (c) below.

   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 Firewatch 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, and 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 Paragraph (b) below, 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 Paragraph B below, the Contractor for Heating, Ventilating and Air Conditioning Work ("HVAC Work") 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). The Contractor for HVAC Work 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 Contractor for HVAC Work 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 Contractor for HVAC Work provided for herein is subject to the exception set forth in Paragraph H.3.b.(2) below.

   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 Contractor for HVAC Work shall be responsible for the provision of Temporary Heat, except as otherwise provided in Paragraph H.3.b.(2) below.

(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 Paragraph H.3.b.(1) below, determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the Contractor for HVAC Work shall be responsible for the provision of Temporary Heat and such Contractor shall be paid for the same in accordance with Paragraph H.3.b.(1).

B. ENCLOSURE OF STRUCTURES

1. Notification - The Contractor for General Construction Work 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 Paragraph A above, once the building has been enclosed, the Contractor for HVAC Work 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 Contractor for General Construction Work, and such work shall be deemed included in the Contractor for General Construction Work's bid 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 Contractor for HVAC Work shall be required to provide Temporary Heat 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 Contractor for HVAC Work 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 Contractor for HVAC Work shall include in its Total Bid 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 General Conditions. 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 (ccds). 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 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.

3. No open fires will be permitted.

4. Electric heating will not be permitted unless required by Contract Documents and Specifications or otherwise approved by the Commissioner.

5. Direct-fired equipment will be allowed in construction areas where the use of such equipment will not damage or deteriorate the construction or finishes or be harmful to persons working in the area.

F. TEMPORARY HEATING SYSTEM

1. The temporary system for the provision of Temporary Heat provided by the Contractor for HVAC

Work following enclosure of the building shall be complete including, but not limited to, torpedo blowers and/or propane heaters subject to provisions of paragraph E above), boilers and fuel storage, pumps, radiators, unit 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. THE CONTRACTOR FOR GENERAL CONSTRUCTION WORK

1. The Contractor for General Construction Work shall coordinate with the Contractor for HVAC Work 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 Contractor for General Construction Work 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 Contractor for General Construction Work shall include all expenses in connection with the supply of water for Temporary Heat in its Total Bid Price. During the period in which Temporary Heat in an enclosed building is being furnished and maintained by the Contractor for HVAC Work, the Contractor for General Construction Work shall, in order to 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 Contractor for General Construction Work shall maintain all permanent or temporary enclosures at its own expense.

H. THE CONTRACTOR FOR HVAC WORK

1. Use of Permanent Heating System for Temporary Heat after Building Enclosure

   a. The Contractor for HVAC Work 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 Contractor for HVAC Work at his 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 Contractor for HVAC Work 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 Contractor for HVAC Work 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 Contractor for HVAC Work, 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 Contractor for HVAC Work 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 has established an allowance in the Contract for HVAC Work for payment of costs and expenses in connection with the provision of Temporary Heat as set forth herein. The amount of such allowance is set forth on the Bid Form for the Contract for HVAC Work and shall be included in the Total Bid Price of the Contractor for HVAC Work. The Contractor for HVAC Work 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 Contractor for HVAC Work 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 Contractor for HVAC Work have not sufficiently advanced the work of their contracts that is necessary and required to permit the Contractor for HVAC Work to use the permanent or other heating equipment for the provision of Temporary Heat, and (ii) the Contractor for HVAC Work does not bear any responsibility for such other Contractors' failure to advance the work, the City shall pay the Contractor for HVAC Work 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 Contractor for HVAC Work 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 Contractor for HVAC Work, the Contractor for HVAC Work shall provide the required maintenance of the permanent heating system for the period of time directed by the Commissioner. The City shall pay the Contractor for HVAC Work 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.

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 Contractor for HVAC Work shall not be entitled to any overhead and/or profit for such fuel costs. In order to receive payment for such fuel costs, the Contractor for HVAC Work 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 Contractor for HVAC Work 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. THE CONTRACTOR FOR ELECTRICAL WORK

1. The Contractor for Electrical Work shall be responsible for providing the items set forth below and shall include all expenses in connection with such items in its Total Bid Price. The Contractor for Electrical Work shall provide such items promptly when required and shall in all respects coordinate its work with the Contractor for General Construction Work and the Contractor for HVAC Work in order to facilitate the provision of Temporary Heat by the Contractor for HVAC Work.

   a. The Contractor for Electrical Work 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 Contractor for Electrical Work 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 Contractor for HVAC Work. Such power shall be provided by the Contractor for Electrical Work for the duration the Contractor for HVAC Work 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 Contractor for Electrical Work 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. THE CONTRACTOR FOR PLUMBING WORK

1. The Contractor for Plumbing Work 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 his Contract. The Contractor for Plumbing Work shall include all expenses in connection with such items of work in its Total Bid Price. The Contractor for Plumbing Work shall provide such items of work promptly when required and shall in all respects coordinate its work with the Contractor for General Construction Work and the Contractor for HVAC Work in order to facilitate the provision of Temporary Heat by the Contractor for HVAC Work.

2. In the event portions of the permanent plumbing equipment furnished by the Contractor for Plumbing Work as part of the work of his Contract are used for the provision of Temporary Heat by the Contractor for HVAC Work, either during construction or prior to acceptance by the City of the complete plumbing system, the Contractor for Plumbing Work 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 his 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 Contractor for Plumbing Work 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).

1.16 Scaffolding and Platforms

A. CONFORMANCE: Unless otherwise indicated, the Contractor for General Construction 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 following items.

B. RESPONSIBILITY

1. A Jobsite Monitor who shall be a competent person, designated and employed by the contractor who has a daily presence on the 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 Monitor is absent. The Jobsite Monitor shall:

a. Verify completeness of documentation and submittals (as described below).
b. Verify that inspections are performed, including pull tests (see below), reports are filed and reported deficiencies are corrected.
c. Monitor trades using scaffold.
d. Limit access to scaffold areas that are tagged for non-use.
e. Inform trades of scaffold load limitations.
f. Monitor loading of decks.
g. Verify that any ties that are temporarily removed are properly restored in the same shift.
h. Verify that outriggers and planks that are moved are properly set up and secured.
i. Verify that all scaffold decks in use have proper access/egress.
j. Verify that all open sides of decks in excess of 14 inches have proper guardrails and toe-boards.
k. 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.
l. Keep a log of significant actions and events connected with the scaffolding.

2. The 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 Contractor shall also be guided by generally accepted standards of scaffold industry practice as promulgated by the Scaffold Industry Association.

3. Scaffold Engineer is a New York State licensed PE engaged by the scaffold contractor / erector and responsible to ensure that the installation design conforms to the New York City Building Code and OSHA requirements, that the design comports with the capabilities of the components and the characteristics of the site, that scaffold loads on the host building, including netting, have been properly considered and that the design documents communicate information for erectors and users.

4. 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 Monitor and inform the Jobsite Monitor of known hazards, non-conformances or violations.

C. JOBSITE DOCUMENTATION AND SUBMITTALS:

1. 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;

2. Site logistics plan / site safety plan;

3. Installation drawing(s), design and product data to be provided for **all** scaffold(s) and shed(s) must include, at a minimum:

a. Plan(s);
b. Elevation(s);
c. Duty load designation; "standard" (150 psf live load) or "heavy duty" (300 psf live load).
d. Details including base support, anchors and ties;
e. Notes and specifications including load limits, number of planked levels, tie spacing, netting, and sequence of installation and removal.
f. Anchorage into sound material.
g. Load limits based on pull tests;
h. Specifications for pull test(s), method, proof load and the number of trials;
i. Elevations, levels or heights, where anchorage is made into masonry;

j. Specifications for frames, planks, screw jacks, anchors, and any other ancillary hardware;
k. Samples for anchors, ties and netting;
l. Sequence of operations for erection and demolition;
m. Location plan, heights, widths, "jumps" over doorways and driveways;
n. Specify size, maximum span and maximum spacing of headers and stringers;
o. Specify legs, girts, braces, nailing and connections;
p. All sidewalk sheds shall be designed, engineered, signed and sealed by a Professional Engineer licensed in the State of New York;
   1) Generic (not job specific) engineering drawings are satisfactory for standard sheds and arrangements.
   2) Special engineering is required for custom sheds, site-specific problems or non-standard arrangements.

D. INSPECTIONS:

1. Signed inspection reports shall be issued for each inspection and pull-test below, and shall be logged and maintained on site by the Jobsite Monitor for the duration of the project.
2. 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.
3. 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 Contractor for standard sheds.
4. 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.
5. A qualified person assigned by the 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.
6. A qualified person assigned by the 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.
7. Scaffolds shall be inspected daily by the Jobsite Monitor or alternate prior to use by scaffold users.
8. At the completion of the project, submit all inspection documents to the Commissioner for record purposes.

E. LADDERS AND STAIRS: The Contractor for General Construction Work 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.

F. ACCESS AND EXITS: 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.

1.17 Hoists and Hoistways

A. RESPONSIBILITY - The Contractor for General Construction Work 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 Contractor for General Construction Work 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 hoistways providing such use meets with the Building Code of the City of New York and the approval of 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 hoistways 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.

1.18 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 before final acceptance of the work of the Contract.

1.19 Acceptance Tests

A. GOVERNMENTAL 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 TEST - 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 Controlled 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, reinspecting, replacing of material and/or damage to the work of other trades and any delay caused to the schedule shall be borne by the Contractor.

1.20 Progress Photographs (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

A. PHOTOGRAPHER - The Contractor for General Construction Work shall employ and pay for the services of a competent photographer who shall take photographs showing the progress of the work.

B. PHOTOGRAPHS - There shall be four (4) photographs taken each month from the commencement of the Contract to the time of completion. These photographs shall show as far as possible, the work

completed within and on the exterior of the structure. The first series of photographs shall be taken prior to the actual commencement of work at the site. In addition thereto before final payment, there shall be six (6) photographs taken of unobstructed views of the completed project or projects 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 done. (For demolition work included in the Contract there shall be four (4) photographs taken before commencement of demolition operations; four (4) at the mid-point of operations; and four (4) at the completion of demolition operations). The prints shall be 8" x 10" gloss finish, mounted with a one (1) inch binding flap of muslin on the left side. They shall be marked on the back with date of exposure; the title of the project; and the specific location. Three (3) copies of each photograph shall be furnished free of charge to the Department of Design and Construction. Photographs shall be taken as ordered by the Commissioner.

1.21 Job Meetings

A. MEETINGS SCHEDULE - Meetings shall be held as scheduled by the Resident Engineer in his office at the site, at which time Contractors for all separate Contracts shall have their representatives present to discuss all details relative to the execution of the work.

B. ACCOMODATIONS - The Contractor for General Construction Work shall provide ample tables and chairs to accommodate all present at the meetings, and table space for Contract Drawings.

C. AGENDA - The Resident Engineer shall preside over these meetings. 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.

The Contractor for General Construction Work shall furnish all necessary typing and printing of the minutes prepared by the Consultant Architect/Engineer. Ample copies of the printed minutes shall be furnished to the Resident Engineer for distribution to all Contractors and representatives of the Commissioner.

D. COORDINATION - Job meetings shall also be called by the Contractor for General Construction Work 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 Contractor for General Construction Work, be held at the same place and immediately following the Job Meetings held by the Resident Engineer. Minutes of these meetings shall be recorded, typed and printed by the Contractor for General Construction Work and distributed to all parties concerned.

1.22 Guarantees and Warranties - Refer to the Addendum to the General Conditions for the applicability of this article.

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 to the General Conditions.

B. FORM – For all guarantee requirements set forth in Schedule B, the Contractor shall provide a written guaranty, in the form set forth on the following page.

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

1.23 Removal of Rubbish and Surplus Materials

A. 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.

B. LOCATION - Each Contractor shall sweep up and deposit, at a location designated on each floor by the Contractor for General Construction Work, all of its rubbish, debris and waste materials, as it accumulates and when directed by the Resident Engineer. Wood cratings shall be broken up, neatly bundled, tied and stacked ready for removal and be deposited at a location designated on each floor by the Contractor for General Construction Work.

C. LABORERS - The Contractor for General Construction Work shall be responsible for the removal of all rubbish, etc., from the site. The Contractor shall remove from the designated locations all piles of rubbish, debris, waste material and wood cratings as they accumulate and when directed by the Resident Engineer, and shall remove them from the site. The Contractor shall employ and keep engaged for this purpose an adequate number of laborers.

D. SURPLUS MATERIALS - Each Contractor shall remove from the site all surplus materials when there is no further use for same.

E. TOOLS AND MATERIALS - At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly removed.

1.24 Cleaning

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 at time of substantial completion.

1.25 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 final inspections by the inspectional staff of the Department of Buildings 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.

1.26 Security Guards/Fire Guards on the Site (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

A. SECURITY GUARDS (WATCHMEN)

1. The Contractor for General Construction Work shall provide competent Security Guards on the site until final completion 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.

2. Every Security Guard shall be required to hold a "Certificate of Fitness" issued by the Fire Department. Every Security Guard shall, during their tour of duty, perform the duties of Fire Guard in addition to their security obligations.

3. Should the Commissioner find that any Security Guard is unsatisfactory, such guard shall be replaced by the Contractor for General Construction Work upon the written demand of the Commissioner.

4. Each Security Guard furnished by the Contractor for General Construction Work shall be instructed by the Contractor for General Construction Work to include in their duties the entire construction site including the Field Office, temporary structures, and equipment, materials, etc.

5. Should the Contractor for General Construction Work or any other Contractor consider the security requirements outlined above inadequate, it 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 Article 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 Article.

B. COSTS - The Contractor for General Construction Work 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 Contractor for General Construction Work.

C. RESPONSIBILITY - All Contractors will be responsible for safeguarding and protecting their own work, materials, tools and equipment.

1.27 Contractor's Daily Reports

A. DAILY REPORTS - As soon as the Contractor has started work on the Project, it shall submit to the Resident Engineer written daily reports of the work performed the previous day by any of its employees, including the employees of its subcontractors.

B. INFORMATION - The reports shall be prepared by the Contractor's Superintendent and shall bear the Contractor's Superintendent signature. Each report shall contain the following information:

1. The type of materials and/or major equipment being installed by the Contractor and the total number of employees working in each category on that particular day.

2. The names of the subcontractors working and the type of materials and/or major equipment being installed by each, together with the total number of employees working for each subcontractor on that particular day.

3. The major construction equipment being used by each Contractor and/or subcontractor.

1.28 Alternate or Substitute Equipment

A. In general, the Contract Drawings and Specifications show and describe arrangements suitable for the specific items of equipment either named or described. In the event that a Contractor submits for approval, and receives such approval, a device or piece of equipment which requires connections (vacuum, gas, steam, water, air, electric, etc.) or arrangements of these services, differing from those indicated or described in the Contract Documents, it shall be incumbent upon the Contractor submitting the alternate or substitute equipment to give timely notice to the other Contractors involved so that they may make suitable alterations in the work to accommodate the substitute or alternate equipment. The Contractor making the substitution shall be responsible for any and all additional

costs incurred by any of the Contractors by virtue of the substitution of equipment for the equipment named or described in the Contract Documents.

1.29 Sleeve and Penetration Drawings (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

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 Contractors for the engineering trades (Plumbing, Heating, Ventilating and Air Conditioning. and Electrical) shall submit to the Department of Design and Construction 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 that it may be determined if such penetrations will materially weaken the project's structure. The sketch will be stamped and returned if approved and/or comments will be transmitted. The engineering Contractors shall continue to submit sketches as the pouring schedule and the concrete work progresses and, until approvals for the penetration sketches have been given, shall not predicate their layout work on unapproved sketches.

1.30 Location of Partitions (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

A. Within three (3) weeks after the concrete slabs have been poured on each floor level, the Contractor for General Construction Work shall immediately locate accurately all of the partitions, including the door openings, on the floor slabs in a manner approved by the Resident Engineer.

1.31 Furniture and Equipment

A. RESPONSIBILITIY - Each Contractor is responsible for moving all loose furniture and/or equipment in all areas when 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.

1.32 Overtime Work (Ordered by Commissioner)

A. OVERTIME – The Commissioner reserves right to order and pay for overtime work.

1. The Commissioner can order overtime work when in the Commissioner's opinion, delay occurs and such delay is not the fault of the Contractor, or
2. When work is of such an important nature that delay in carrying such work to completion would result in serious disadvantage to the public.

B. ORDER FOR OVERTIME WORK - When overtime work is ordered by the Commissioner, such "Order" will be issued by the Commissioner on a special form letter over the signature of the Commissioner.

C. CONTRACTOR'S PROCEDURE PRIOR TO COMMENCING WORK

1. Make immediate application to the Commissioner of Department of Labor, State of New York, for dispensation in accordance with Subdivision 2 of Section 220 of the Labor Law.
2. Upon receipt of such dispensation, proceed expeditiously with ordered overtime work.

1.33 Compliance with OSHA Regulations

These Contract Documents and the work hereby contemplated shall be governed, at all times, by the following Federal Laws:

A. William Steiger Occupational Safety and Health Act of 1970, Public Law 91-596;

B. Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations;

C. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

1.34 Temporary Services

PART A **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

A. TEMPORARY WATER - during construction shall be furnished in the following manner:

1. Immediately after the Contractor for General Construction Work has been ordered by the Commissioner to start work, it shall file an application with the Dept. of Environmental Protection for the schedule of charges for water use during construction. The Contractor for General Construction Work will be responsible for payment of water charges.

2. Immediately after the Contractor for Plumbing Work has been ordered by the Commissioner to start work, it shall file an application with the Department of Environmental Protection's Bureau of Water Supply and obtain its permit to install the temporary water supply system. The system shall be installed and maintained for the use of all Contractors. A copy of the above mentioned permit shall be filed with the Commissioner. The Contractor for Plumbing Work 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 Contractor for Plumbing Work 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 Contractor for Plumbing Work shall take the necessary precautions to prevent the temporary systems from freezing.

B. TOILET FACILITIES - both exterior and interior, for the use of all Contractors, shall be furnished and installed in the following manner:

1. Toilet fixtures shall be furnished, installed and maintained in a satisfactory operating condition by the Contractor for Plumbing Work.

2. Enclosures for the toilet fixtures shall be erected and maintained by the Contractor for General Construction Work.

3. Heating for the enclosures shall be furnished, installed and maintained by the Contractor for General Construction Work.

4. Electric lighting for the enclosures shall be furnished, installed and maintained by the Contractor for Electrical Work.

5. The Contractor for General Construction Work shall keep the temporary toilet fixtures and enclosures in a clean and sanitary manner.

6. No Contractor shall cause any sanitary nuisances to be committed by its employees in or about the work. Each Contractor shall enforce all sanitary regulations of the City and State Health Authorities.

C. OVERTIME USE - Whenever any Contractor(s) work before or after the regular work hours hereinafter specified under Subparagraph D, or on a Saturday, Sunday or Holiday of any trade, such Contractor(s) shall pay the Contractor for Plumbing Work 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 D shall apply.

D. ACTIVATION - The Contractor for Plumbing Work 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 Contractor for Plumbing Work or until the services are terminated by instructions from the Commissioner.

PART B **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

A. WATER - The Contractor for General Construction Work will be responsible for payment of water charges. Billing will be in accordance with the Department of Environmental Protection schedule of charges for Building Purposes.

B. ELECTRICITY - for temporary light and the operation of small tools, is available in the area of this project and will be furnished to the Contractor for General Construction Work by the Contractor for Electrical Work without cost.

C. TOILET FACILITIES. - The Contractor for General Construction Work shall arrange with the Commissioner for the temporary use of certain toilets or washrooms within the project for the use of all employees during the execution of the work.

D. MAINTENANCE - The Contractor for General Construction Work shall maintain the temporary toilet facilities in a clean and sanitary manner and make all necessary repairs due to misuse.

E. 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.

1.35 Temporary Use, Operation and Maintenance of Elevators during Construction

PART A - FOR NEW BUILDINGS UP TO AND INCLUDING 15 STORIES **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

A. INSTALLATION - The Contractor for General Construction Work shall install and complete, as indicated herein, one (I) selected main elevator in the Project for temporary operation by the Contractor for General Construction Work for the transporting of employees of all Contractors and representatives of the Department of Design and Construction and other Governmental Agencies having jurisdiction of work at the project. The Contractor for General Construction Work shall furnish, install and maintain for such elevators, 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 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 Contractor for General Construction 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. The Contractor for General Construction shall employ and pay wages, including overtime wages if necessary, for all workers required for the operation and maintenance of the temporary elevator. The Contractor for General Construction shall be responsible for all costs for: (1) the installation of 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) all work in pits, shaftways and machine rooms necessary for the operation of the elevator, and (4) the replacement of the temporary elevator or parts utilized in connection therewith, if required.

C. ACTIVATION TIME - The Contractor for General Construction Work shall keep the temporary elevator 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 the aforementioned trades.

D. COMMENCEMENT OF SERVICE - The Contractor for General Construction Work 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 shaftway 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 shaftways.

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.

E. ELECTRICAL INSTALLATION - The Contractor for Electrical Work, 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 Contractor for Electrical Work shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer. The cost of this work shall be included in the Contractor for Electrical Work's Contract.

F. REMOVAL - When elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the Contractor for General Construction Work shall remove the temporary enclosures and all temporary elevator equipment and promptly proceed with the installation of the permanent equipment as is required under the Contract.

G. INSPECTION - Before temporary elevator equipment has been removed, a joint inspection of the equipment shall be made by the Contractor for General Construction Work and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection deems it necessary, the Contractor for General Construction Work 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 therefor will be made in accordance with Article 26 of the Contract.

H. REPLACEMENT - The Contractor for General Construction Work shall replace with new, any of the equipment or parts of the temporary elevator installation that were damaged, destroyed, or that indicate excessive wear or corrosion excepting the replacement of hoisting ropes. All shaftways, 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 Contractor for General Construction Work except for the replacement of hoisting ropes.

I. COSTS - The Contractor for Electrical Work shall pay the costs of all electrical current used for operating the temporary elevators. The Contractor for General Construction Work shall provide all necessary conduit and wiring connections for the proper operation of the elevator and the signaling of the temporary elevators.

J. LIMITATIONS OF USE - The temporary elevator shall not be used during its operation for hoisting of materials or removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representatives of City Departments 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 Contractor for General Construction Work 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).

K. PAYMENT FOR USE - The Contractor for General Construction Work 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 Contractor for Electrical Work under its Contract, shall be included in the Contractor for General Construction Work's Contract.

L. LIQUIDATED DAMAGES - The Contractor for General Construction Work 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 Contractor for General Construction Work.

M. OVERTIME USE - All Contracts. Whenever any Contractor or Contractors work before or after the regular work hours as indicated in Paragraph B above, or on a Saturday, Sunday or Holiday, such Contractor or Contractors shall pay the Contractor for General Construction Work for the operation and maintenance of the temporary elevator, if required by such Contractor or Contractors, at the daily rate indicated in the Contract but increased to reflect the difference between regular wage rates and overtime wage rates. The basic hourly charge shall be considered as one ninth (1/9) of the amount shown in the Item of the Bid form of the General Construction Work Contract. The City will not pay any Contractor for such overtime use of the elevator. When more than one (1) Contractor is involved in the overtime work, the charges shall be prorated as determined by the Resident Engineer unless otherwise agreed mutually among all the Contractors involved.

PART B - FOR NEW BUILDINGS OVER 15 STORIES **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

A. INSTALLATION - The Contractor for General Construction Work shall install and complete, as indicated herein, two (2) selected main elevators in the Project for temporary operation by the Contractor for General Construction Work for the transporting of employees of all Contractors and representatives of the Department of Design and Construction and other Governmental Agencies having jurisdiction over work at the project. The Contractor for General Construction Work shall furnish, install and maintain for such elevators, 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 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. The two (2) elevators will not be operated simultaneously.

B. RESPONSIBILITY - The Contractor for General Construction 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. The Contractor for General Construction shall employ and pay wages, including overtime wages if necessary, for all workers required for the operation and maintenance of the temporary elevator. The Contractor for General Construction shall be responsible for all costs for: (1) the installation of 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) all work in pits, shaftways and machine rooms necessary for the operation of the elevator, and (4) the replacement of the temporary elevator or parts utilized in connection therewith, if required.

C. ACTIVATION TIME - The Contractor for General Construction Work shall keep the temporary elevator 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 the aforementioned trades.

D. LOW RISE ELEVATOR - The Contractor for General Construction Work 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 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.

E. ELECTRICAL INSTALLATION - The Contractor for Electrical Work, 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 Contractor for Electrical Work shall make all these required connections as soon as the Equipment is declared ready for such connections by the Resident Engineer. The cost of this work shall be included in the Contractor for Electrical Work's Contract.

F. HIGH RISE ELEVATOR - The Contractor for General Construction Work 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.

G. The Contractor for Electrical Work, 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 shaftway.

The Contractor for Electrical Work shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer. The cost of this work shall be included in the Contractor for Electrical Work's Contract.

H. When the high rise elevator is completed and ready for temporary operation, the low rise temporary elevator shall be shut down.

I. 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 Contractor for General Construction Work shall remove the temporary enclosures and all temporary elevator equipment, and promptly proceed with the installation of the permanent equipment as is required under the Contract.

J. Before temporary elevator equipment has been removed, a joint inspection of the equipment shall be made by the Contractor for General Construction Work and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection determines it necessary, the Contractor for General Construction Work 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 therefor will be made in accordance with Article 26 of the Contract.

K. The Contractor for General Construction Work shall replace with new, any of the 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 shaftways, 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 Contractor for General Construction Work except for the replacement of hoisting ropes.

L. The Contractor for Electrical Work shall pay the costs of all electrical current used for operating the temporary elevators. The Contractor for General Construction Work shall provide all necessary conduits and wiring connections for the proper operation of the elevators and the signaling of the temporary elevators.

M. No temporary elevator shall be used during its operation for hoisting of materials or removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representatives of City Departments and other governmental agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specific 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 time 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 Contractor for General Construction Work 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.

N. The Contractor for General Construction Work 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 Contractor for Electrical Work under its Contract, shall be included in the Contractor for General Construction Work's Contract.

O. LIQUIDATED DAMAGES - The Contractor for General Construction Work 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 Contractor for General Construction Work.

P. OVERTIME USE - ALL CONTRACTS. Whenever any Contractor(s) work before or after the regular work hours as indicated in Subparagraph B above, or on a Saturday, Sunday or Holiday, such Contractor or Contractors shall pay the Contractor for General Construction Work for the operation and maintenance of the temporary elevator, if required by such Contractor or Contractors, at the rate indicated in the Item of the bid form of the General Construction Work Contract but increased to reflect the difference between regular wage rates and overtime wage rates. The basic hourly charge shall be considered as one ninth (1/9) of the amount shown in the item of the General Construction Work Contract. The City will not pay any Contractor for such overtime use of the elevator. When more than one (1) Contractor is involved in the overtime work, the charges shall be prorated as determined by the Resident Engineer unless otherwise agreed mutually among all the Contractors involved.

PART C - EXISTING BUILDINGS **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

A. The Contractor for General Construction Work may use, at the Commissioner's discretion, one (1) selected elevator in the project for temporary operation by the General Construction Work Contractor for the transportation of employees of all Contractors and representatives of the Department of Design and Construction and other Governmental Agencies having jurisdiction over work at the Project. The Contractor for General Construction Work shall maintain for such elevators, all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices hand reset target annunciators, signal devices, and all other permanent or temporary parts. The installation 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. The Contractor for General Construction 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. The Contractor for General Construction shall employ and pay wages, including overtime wages if necessary, for all workers required for the operation and maintenance of the temporary elevator. The Contractor for General Construction shall be responsible for all costs for: (1) the installation of 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) all work in pits, shaftways and machine rooms necessary for the operation of the elevator, and (4) the replacement of

the temporary elevator or parts utilized in connection therewith, if required.

C. The Contractor for General Construction Work 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. The Contractor for General Construction Work shall replace with new any of the equipment or parts of the elevator for temporary operation installation that were damaged, destroyed, or that indicate excessive wear or corrosion excepting the replacement of hoisting ropes. All shaftways, 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 Contractor for General Construction Work except for the replacement of hoisting ropes.

E. The elevator for temporary operations shall be used during its operation for hoisting of materials or removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representative of City Departments 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 Contractor for General Construction Work shall give notification in writing to the Resident Engineer of any alleged employed for the hoisting of materials by the particular Contractor(s).

F. The Contractor for General Construction Work 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 Contractor for Electrical Work under its Contract, shall be included in the Contractor for General Construction Work's Contract.

G. LIQUIDATED DAMAGES - The Contractor for General Construction Work 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 Contractor for General Construction Work.

H. OVERTIME USE - ALL CONTRACTS - Whenever any Contractor(s) work before or after the regular work hours as indicated in Paragraph B above, or on a Saturday, Sunday or Holiday, such Contractor(s) shall pay the Contractor for General Construction Work for the operation and maintenance of the elevator, if required by such Contractor(s) at the union daily rates but increased to reflect the difference between regular wage rates and overtime wage rates. The City will not pay any Contractor for overtime use of the elevator. When more than one (1) Contractor is involved in the overtime work, the charges shall be prorated as determined by the Resident Engineer unless otherwise agreed mutually among all the Contractors involved.

1.36 General Mechanical Requirements (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

A. The General Mechanical Requirements contained herein shall be followed by all Contractors furnishing mechanical equipment under their respective Contracts.

B. 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.

C. THE 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. The Contractor shall follow these Contract Drawings in laying out the work and shall consult the Contract Drawings of the other Contracts to become familiar with all conditions affecting it and to verify the spaces in which it will be installed. The Contractor shall cooperate with the Public Utilities doing certain necessary work for this project. The attention of the Contractor is called to the Contract Drawings for General Construction Work for the location, arrangement and extent of plumbing and other fixtures and equipment. All work shall be installed in locations as shown on these Contract Drawings.

D. CERTIFICATES - On completion of the work, the 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. The work shall not be deemed substantially complete until the certificates have been delivered.

E. SHOP DRAWING SUBMITTALS - Contractors doing mechanical work shall submit, as directed, Shop Drawings, roughing drawings, manufacturer's Shop Drawings, field drawings, cuts, bulletins, etc., of all materials, equipment and methods of installation shown or specified.

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.

F. ACCESSIBILITY - All work shall be installed by the 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.

G. 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 Contractor shall make such changes as directed and approved, without extra cost to the City.

H. CLEANING OF PIPING, DUCTS, AND EQUIPMENT - Piping, ducts and equipment shall be thoroughly cleaned by the 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 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.

I. 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.

J. MACHINERY PARTS - shall conform exactly to the dimensions shown on the Contract Drawings. The equivalent parts of identical machines shall be identical so that they can be interchangeable.

K. FITTINGS - All grease lubricating fittings on equipment shall be of a uniform type and shall be readily accessible and types proposed to be used shall be submitted for approval.

L. GUARDS - All machinery shall be designed with protecting guards conforming with the requirements of the Industrial Code of the New York State Department of Labor or OSHA, whichever is stricter.

M. LIMIT SWITCHES - Unless otherwise specified, limit switches and other mechanically actuated switches shall be enclosed in tight metal boxes and be installed in the proper locations ready for conduit connections. Switches shall be complete with all supports, stops, cams, arms, tripping and operating members, which shall be adjustable where required for proper functioning.

N. ANCHORS, BOLTS, ETC. AND FOUNDATIONS - Unless otherwise specified, the Contractor shall furnish the necessary anchors, bolts, guides, track rails, bearing plates, substantial templates and all other appurtenances, and build the necessary foundations, as approved by the Commissioner, for all equipment supplied by the Contractor under its Contract.

O. EQUIPMENT DESIGN - Equipment and appurtenances shall be designed in conformity with ASME and AIEE standards and shall be of rugged construction and of sufficient strength to withstand all stresses which may occur during fabrication, testing, transportation, installation, and all conditions of operations. Adequate stays, braces and anchors shall be provided. All bearings and moving parts shall be adequately protected against wear by bushings, or other approved means, and shall be fully lubricated by readily accessible devices. Details shall be designed for appearance as well as utility. Protruding members, joints, corners, gear covers and the like shall be finished in appearance. All exposed welds shall be ground smooth and the corners of structural shapes shall be mitered.

P. SUPPORTING STRUCTURES DESIGNED BY THE CONTRACTOR - Unless otherwise specified, supporting structures for equipment to be furnished by the Contractor shall be designed and built by the Contractor of sufficient strength to safely withstand all stresses to which they may be subjected, within permissible deflections, and shall meet the following standards:

1. Structural Steel - ASTM Standard Specifications, AISC and NYBC.

2. 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 NYBC for average concrete.

3. 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.

Q. ENGINEER'S ASSUMED DESIGN DATA - All structural steel, concrete and reinforcement indicated or specified to support the equipment or appurtenances and the area immediately adjacent thereto have been designed from data based on assumed average anticipated clearances and loading. The final structural design in these locations will be based on definite data received from the Contractor after the Commissioner approves the equipment and appurtenances to be installed. The Commissioner will then redesign, if necessary, the supporting structure to properly support and maintain the approved equipment and appurtenances. Necessary major changes in design will be covered by Supplementary Drawings that will be furnished to the Contractor. All changes indicated or necessary to accommodate the equipment and appurtenances, shall be incorporated into the Working Drawings submitted for approval, and the cost of furnishing and installing the work necessitated by these changes shall be borne by the Contractor furnishing the equipment.

R. INSTALLATION OF EQUIPMENT - Equipment shall be erected in a neat and workmanlike manner on the foundations, at the locations and elevations shown on the Contract Drawings or as required. All equipment shall be correctly aligned, leveled and adjusted for satisfactory operation and shall be installed so that proper and necessary connections can be made readily between various units and with piping and equipment that may be installed under other Contracts. When required by the Specifications, the Contractor shall obtain the assistance of a competent and experienced Engineer or Superintendent, in the employ of the manufacturer, to install the equipment.

S. ELIMINATION OF NOISE - All work provided under the Contract shall operate without objectionable noise or vibration.

1. 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 Contractor shall at its own expense make changes in piping, equipment, etc. and do all work necessary to eliminate objectionable noise or vibration.

2. Should noise or vibration found objectionable by the Commissioner be transmitted by any pipe or portions of the structure from equipment installed under the Contract, the 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.

T. GROUTING - The Contractor shall furnish all material and labor for proper bedding on Portland Cement grout, the equipment or its supporting base. Grout shall consist of one (l) part Portland Cement and one (l) part of approved sand. The top of the masonry foundation shall be properly cleaned and wetted before grouting. Grout shall completely fill all spaces between the equipment, or base, and the foundation and it shall generally average one (1) inch in thickness. Leveling wedges shall not be removed before the grout has reached its final set. Voids left by wedges shall be pointed with grout. Exposed surfaces of the grout shall have a finished appearance.

U. PRELIMINARY FIELD TEST - As soon as conditions permit, the 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 Contractor shall, prior to the acceptance test, make all changes, adjustments and replacements required.

V. INSTRUCTIONS ON OPERATION - At the time the equipment is placed in permanent operation by the City, the Contractor shall make all adjustments and tests required by the Commissioner to prove that such equipment is in proper and satisfactory operating condition. The 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.

1.37 General Electrical Requirements

SCOPE - This Article 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 Article and the requirements of the Specifications and/or the Contract Drawings, whichever requirements is the most stringent, as determined by the Commissioner, shall take precedence.

PART A - PROCEDURE--ELECTRICAL APPROVALS

SCOPE- This 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 contracts 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. SUPERVISION AND ACCEPTANCE - The electrical work and equipment shall be installed under the supervision of the Commissioner's representative. Final acceptance and approval of the work will be contingent upon the inspection and test of the installation by the City regulatory agency, on completion.

C. TESTS - The Contractor shall notify the Commissioner when the Contractor will examine and begin

work and shall also notify the Commissioner when the Contractor has completed the work and is ready to have it inspected and tested. Upon completion of the work and prior to final payment, tests shall be made as required by the Commissioner of all electrical materials, electrical and associated mechanical equipment, and of appliances installed hereunder. The Contractor shall furnish all labor and material for such tests. Should the tests show that any of the material, appliances or workmanship are not first class or not in compliance with the Contract, the 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.) - Before final payment is made, there must be filed with the Department of Design and Construction, a Certificate of Inspection signed by the Director of the B.E.C., which Certificate shall certify that all materials and workmanship comply with the rules and regulations of the B.E.C. of the City of New York and with the Electrical Code of the Administrative Code of the City of New York.

E. RESPONSIBILITY FOR CARE AND PROTECTION OF EQUIPMENT

1. The 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 these Specifications.

2. After delivery and before and after installation, the Contractor shall protect all equipment against theft, injury or damage from all causes. The 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 the Contractor or replaced by the Contractor without additional cost to the City.

F. UNIFORMITY OF EQUIPMENT - Any two (2) or more pieces of apparatus or materials of the same kind, type or classification and being used for identical types of service, shall be made by the same manufacturer.

G. CONTRACTOR'S ELECTRICAL DRAWINGS AND SAMPLES FOR APPROVAL

1. The Contractor shall submit to the Commissioner for approval, 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 Contractor shall submit 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.

H. TIMELINESS - All material shall be submitted in sufficient time for the program 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.

I. CONTRACTOR'S STATEMENT WITH SUBMITTALS - All dimensional drawings of equipment, blueprints, catalogues, models, samples and other data relative to the equipment, the materials, the work or any part thereof submitted for approval are to be accompanied by a statement that they have been examined by the Contractor and that the drawings, data and other material submitted agree with the requirements of the Contract and Specifications and shall list and describe the points of

disagreements, if any exist. In the absence of such statement, approvals will be given with the understanding that articles of equipment or materials or methods of installation are in substantial compliance with the Contract and that if the adoption of these designs, details, articles, equipment, materials, constructions, installations, places and locations necessitate changes, alterations or replacements at an increased cost to the Contractor or others, the Contractor making the substitution for the specified equipment or material shall bear all such additional expense involved.

J. BULLETINS AND INSTRUCTIONS - The Contractor shall furnish and deliver to the Commissioner, 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 B - TEMPORARY LIGHTING, SITE SECURITY LIGHTING & POWER

SCOPE - This Section sets forth the General Conditions and procedures relating to Temporary Lighting, Site Security Lighting and Power during the construction period, and is applicable to, and binding on, all Contracts insofar as they are affected.

A. TEMPORARY LIGHTING **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

1. Energy for the Temporary Lighting System for minor rehabilitation projects (those projects whose existing distribution system is not being changed or modified under the scope of this project) may be taken from the existing electrical distribution system if the existing system is of adequate capacity for the additional temporary lighting load. The Contractor for Electrical Work is to cooperate and coordinate with the facility custodian so as not to interfere with the normal operation of the facility.

2. Energy for the Temporary Lighting system for new projects and for those existing projects that are not covered in the preceding paragraph shall be provided as in the following paragraphs.

3. CONNECTION TO UTILITY LINES - Temporary Electric Service for use during construction shall be provided as follows: The Contractor for Electrical Work 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. The Contractor for Electrical Work shall include in its bid any charges which may be made by the Public Utility Company for extending its electrical facilities, and for making final connections. The Contractor for Electrical Work shall make payment directly to the Public Utility Company.

4. APPLICATIONS FOR METER - The Contractor for Electrical Work 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 Lighting. The Contractor for Electrical Work shall pay to the Public Utility Company, all bills for Temporary Lighting energy used throughout the work, as they become due.

5. SERVICE AND METERING EQUIPMENT - The Contractor for Electrical Work shall furnish and install, at a suitable location on the site, approved service and metering equipment for the Temporary Lighting 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 Temporary Lighting and Site Security Lighting and shall meet all requirements of the NYCEC.

6. The Contractor for Electrical Work shall furnish and connect to the metered service point, a system of Temporary Lighting 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.

7. ITEMS - The Temporary Lighting System 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, trailers 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.

8. The Temporary Lighting System shall be progressively installed as required for the advancement of the work under the various Contracts.

9. RELOCATION - Any 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 Commissioner's field representative, shall bear all costs thereof.

10. TRAILERS - Trailers shall be furnished with left-hand sockets with locked type guards and 40 feet of rubber covered cable. The Contractor for Electrical Work shall furnish and distribute a minimum of three (3) complete trailers to each Contractor. See the detailed Electrical Specifications for possible additional trailers required.

11. LAMPS - The Contractor for Electrical Work 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 Contractor for Electrical Work while those in the trailers shall be replaced by the Contractor using such equipment. All lamps shall be 100 watt.

12. CIRCUIT PROTECTION - The Contractor for Electrical Work shall furnish and install GFI protection for the Temporary Lighting and Site Security Systems.

13. ENERGIZING - The Contractor for Electrical Work 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 completion and final acceptance of the work of the Contractor for Electrical Work or until the services are terminated by instructions from the Commissioner.

14. MAINTENANCE OF TEMPORARY LIGHTS

    a. The Contractor for Electrical Work shall maintain the Temporary Lighting System in good working order during the scheduled hours established.

    b. The Contractor for Electrical Work is to include in its contract all charges for energy for the Temporary Lighting System.

    c. The Contractor is advised to show the estimated cost of the installation, maintenance and energy of temporary electrical facilities in its detailed cost estimate of its Contract so as to facilitate partial payments during construction.

15. OVERTIME USE - Any Contractor requiring Temporary Lighting Service before or after hours set forth hereinbefore, or on weekends or a Holiday for all trades involved in the construction of this facility, shall pay for the additional cost of keeping the system energized and repaired. If more than one (1) Contractor is involved, the charges shall be prorated, or shared by other acceptable means previously agreed upon by the Contractors involved. When overtime is required by all Contractors on the work, the provisions for payment for regular time use of the Temporary Lighting System shall apply.

16. SERVICE BEYOND COMPLETION DATE - When failure to comply with the terms and conditions of any Contract necessitates temporary light beyond the date set for completion of the Contract for Electrical Work, the Contractor requiring such additional service shall pay for keeping it energized. When more than one (1) Contractor requires such service, the expense thereof shall be prorated

as determined by the Commissioner.

17. 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 Contractor for Electrical Work, 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.

18. REMOVAL OF TEMPORARY LIGHTING WIRING - The temporary lighting system shall be removed by the Contractor for Electrical Work when authorized by the Commissioner.

19. HAND TOOLS - The temporary electric lighting system shall not be used for power purposes, excepting that light hand tools not larger than 1/4 horsepower may be operated therefrom by any Contractor.

B. SITE SECURITY LIGHTING (FOR NEW CONSTRUCTION ONLY) **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

1. The Contractor for the Electric Work 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.

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, and a part of the system interferes with the work of any trade, that trade 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 Contractor for Electrical Work.

5. The site security system shall be kept illuminated at all times during the hours of darkness. The Contractor for Electrical Work, at its own expense, shall keep the system in operation, furnishing and installing all material necessary to replace all damaged or burned out parts.

6. The Contractor for Electrical Work 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 Contractor for Electrical Work and shall be removed and disposed of by the Contractor for

Electrical Work upon completion of that phase of the project.

C. TEMPORARY POWER

1. Any Contractor requiring temporary power for equipment larger than 1/4 horsepower shall arrange with the Public Utility for service and pay for all electrical energy consumed by its lines.

2. The Contractor shall provide service, metering equipment and distribution centers as required, and be responsible for keeping the system in working order.

3. When directed by the Commissioner, the Contractor shall remove its own temporary power system.

D. 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 Contractor for Electrical Work shall have the temporary lighting system changed over from the temporary service points to the main distribution panel.

2. COST OF CHANGE OVER - The Contractor for Electrical Work shall be responsible for all cost 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 lighting specified herein shall be adhered to after change over of service.

4. NO EXTRA COST - The operation of the service and switchboard equipment shall be under the supervision of the Contractor for Electrical Work, 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 Contractor for Electrical Work.

PART C - ELECTRICAL INSTALLATION PROCEDURE

SCOPE - This Section sets forth the general installation procedure that shall apply to all electrical work and electrical equipment appearing in any of the Contracts.

A. INTENT OF CONTRACT DOCUMENTS - Contract Specifications and Contract Drawings 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 the Department of Design and Construction. 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 the Department of Design and Construction 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 Contractor for Plumbing Work 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. RESPONSIBILITY FOR ERRORS OF INSTALLATION - In case of interference with the work of others or erroneous placement of work with respect to equipment or structures, each Contractor shall cooperate with other affected Contractors for an immediate agreeable solution of the affected work with each Contractor furnishing its responsible share of the labor and materials necessary to complete the installation in an approved manner.

F. 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.

G. 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 cost to the City.

H. 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.

I. DEFINITIONS

1. WIRING means both wire and raceway (rigid steel, heavy wall conduit unless specifically indicated otherwise).

2. 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.

3. 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.

J. 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.

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 substantial 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 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 can not 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 Specific Requirements, 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.

K. WORK BY CONTRACTOR FOR ELECTRICAL WORK - The Contractor for Electrical Work shall perform the following work:

1. PANELETTE - The Contractor for Electrical Work shall furnish and install a four (4) circuit panelette in each mechanical equipment room.

2. STARTERS AND DISCONNECT SWITCHES - The associated disconnect switches and starters approved by the Department of Design and Construction which require mounting or wiring apart from a main equipment unit shall be delivered, prewired, to the Contractor for Electrical Work at the site of the project, who shall install and wire them. The electrical Contractor shall acknowledge acceptance in writing to the Contractor supplying them, and thereafter assume responsibility for their safe keeping until final acceptance of its work by the City.

3. CONTROL DEVICES - The Contractor for Electrical Work shall install conduit, wire, and make all connections for all interlock and control devices furnished under the Plumbing Work Contract and also all control and interlock devices furnished under the General Construction Work Contract, except for door control wiring. The various control and interlock devices, furnished (prewired) by the Contractors for Plumbing and General Construction Work Contractors, shall be installed and final connections made by the Contractor for Electrical Work.

4. DOOR CONTROL WIRING - Unless specifically detailed otherwise in the Contract Documents for Electrical Work, all door control and interlock devices are to be furnished and installed and wired by the Contractor furnishing the required control and interlock devices.

5. TESTS - The Contractor supplying the equipment, together with the Contractor for Electrical Work shall cooperate in making preliminary tests to establish the correctness of the installation. If a faulty operation of the unit is discovered, the Contractor whose work is the cause shall, without delay, remedy the trouble.

L. PAINTING

1. Ingredients and methods of application shall conform to that as required for similar work under the Contract for General Construction Work.

2. ALL METAL CABINETS - including switchboards, panelboards, boxes (pull, junction and outlet), trims, doors and covers shall be painted as follows:

All surfaces inside and outside, one (1) approved coat of primer. All accessible surfaces one (1) coat of approved paint inside and outside, in the field after installation.

3. HANGERS, CONDUITS AND FITTINGS – The Contractor who installs them shall give one (1) field applied, approved coat primer, followed by a second coat.

4. FINAL COAT--A final or third coat of paint, as directed, shall be applied by the Contractor installing them when the wall surfaces on which they are supported or the ceiling from which they are hung are not painted by the Contractor for General Construction Work. Pull boxes shall be neatly and legibly stenciled to show service.

5. PAINTING OF MOTORIZED EQUIPMENT - The Contractor furnishing electrically driven equipment shall paint motors and driven equipment, starters and controllers and other equipment provided by the Contractor. The Contractor shall provide any painting or finishing that may be required in the Specifications. For certain equipment having special corrosion resistant factory finishes, painting may be waived by special permission. Equipment shall be neatly stenciled, with legible characters to indicate service by the Contractor who supplies the equipment.

6. NAME PLATES - shall be left clean of all paint.

PART D - ELECTRICAL CONDUIT SYSTEM INCLUDING BOXES (PULL, JUNCTION AND OUTLET) - **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

SCOPE - This 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 specifically indicated otherwise. TYPES-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.

A. CONDUIT TYPES

1. RIGID STEEL CONDUIT - shall be interpreted to 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 Building Code. Rigid steel conduit shall be used for all underground conduits in contact with earth, for Fire Alarm Systems and as required by authorities having jurisdiction.

2. ELECTRICAL METALLIC TUBING (EMT) - shall be industry standard thin wall conduit of galvanized steel only. All elbows, bends, couplings and similar fittings which constitute a part of the conduit system shall be specifically designed 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.

3. FLEXIBLE METALLIC - 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.

B. 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 NYCEC 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 zinc coated 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 (each Contractor 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. For conduits one (1) inch in diameter or larger, insulating bushings to be O.Z. or approved equal.

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 of lignum vitae 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 Electrical Inspector. 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 Electrical Inspector and submitted in triplicate for approval. This record shall be entered on the Record drawings, which are required under "General Conditions Governing All Contracts."

d. CAPPING - All empty conduit and duct openings, after test, shall be capped or plugged by the Contractor as directed.

e. DRAG LINES - A drag line shall be left in all empty conduit.

C. BOXES

1. The Contractor shall furnish and erect all pull boxes indicated on the plans or where required. Sides, top and bottom of pull boxes shall be zinc 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. All pull boxes shall be suspended from ceiling or walls in the most substantial manner.

2. For large boxes, sufficient suitable porcelain clamp insulators or other approved devices shall be provided in the pull boxes for supporting the cables passing through the box so that the cables will not be unsupported for a distance greater than three (3) feet and so as to permit a neat and orderly arrangement of the cables.

3. For pull boxes having the largest side more than nine (9) square feet in area, special rectangular and diagonal angle-iron bracing will be required as approved.

4. Pull boxes of special or odd shapes are required to be installed by the Contractor, even though not shown on plans, where necessary to overcome interference or to facilitate the pulling of conductors in conduits.

5. In centering outlets, the Contractor is cautioned to allow for overhead pipes, ducts and other obstructions, and for variations in arrangement and thickness of fireproofing, soundproofing and plastering. Precautions should be exercised regarding the location of window and door trims,

paneling, etc. Mistakes resulting from failure to observe these precautions, must be corrected by the Contractor without cost to the City. Outlets in hung ceilings shall be supported from the black iron or structure.

6. The exact location of all outlets in finished rooms shall be as directed. When the interior finish has been applied, the 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.

7. Exposed wall outlet boxes shall be erected neatly and tight against the walls and securely anchored to same.

8. 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.

9. 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

10. 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.

11. 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 Contractor without additional charge.

12. 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.

13. 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.

14. 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.

15. 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, noncorrodible and not less than four (4) in number for each box opening.

PART E - ELECTRICAL WIRING DEVICES **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

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, 15 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 then three (3) switches are located at one (1) point, the faceplates may be made up in multiple units.

PART F - ELECTRICAL CONDUCTORS AND TERMINATIONS **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

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 detailed

Specifications of applicable Contracts.

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 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. TESTS

1. NOTIFICATION OF TEST - No cable shall be released for shipment from the mill unless authorized by the Commissioner. The Contractor shall give the Commissioner at least 10 days notice when the cable will be available for testing at the mill. The Contractor's representative or inspector shall have access during working hours to all parts of the plant where the cable is being manufactured, and all reasonable inspection and testing facilities shall be afforded to the Contractor without increase in price to the City. The Inspector shall witness the complete test of cable and receive a copy of all test data.

2. TEST DATA - The Contractor shall forward to the Commissioner six (6) copies of all test data for approval before accepting shipment of the cable.

3. INSPECTION DURING MANUFACTURE - The Commissioner reserves the right to dispatch a representative to the factory at any time during the period of manufacture of the cable for the purpose of expediting or checking progress. The living and traveling expenses of the City Engineers making these inspections and witness tests will be borne by the City of New York.

4. TEST IN CITY LABORATORY - Sufficient additional length of conductor shall be provided on each reel, so that a six (6) foot sample may be removed for testing in the City's Laboratories. This sample shall be cut from the reel in the presence of the Inspector of the Department of Design and Construction and cut in two (2) three-foot lengths, each piece to be tagged showing reel number, size and type, manufacture, date, name or project & Contract number. Samples shall be handed to the Inspector for transmittal. If it is found as the result of test that the cable does not comply with the approved factory test the Contractor will be ordered to remove all cable which came off the reel and has been installed, and to replace the defective cable not used, without cost to the City. The Contractor will be held responsible for any delays in the construction program caused by the defective cable.

5. FINAL FIELD TEST - After conductors are installed and connected, the City will test the work for overall insulation resistance. The Contractor shall furnish all test equipment necessary. To be acceptable, the test shall meet the requirements set forth in the NYCEC.

I. 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.

J. 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 manufacture. 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 Contractor for Electrical Work 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.

PART G - CIRCUIT PROTECTIVE DEVICES **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

SCOPE - 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 BARRIERS - 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. The trip rating of all circuit breakers shall not exceed 70% of frame rating.

7. 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 Specific Requirements or indicated on the Contract Drawings.

8. 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, 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.

9. CONSTANCY OF CALIBRATION - The tripping elements shall insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.

10. CONTACTS shall be non-welding under operating conditions and of the silver to silver type.

11. 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.

12. 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.

PART H - DISTRIBUTION CENTERS **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

SCOPE - 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 deadfront 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 ½ 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 CONSTRUCTION AND SUPPORT

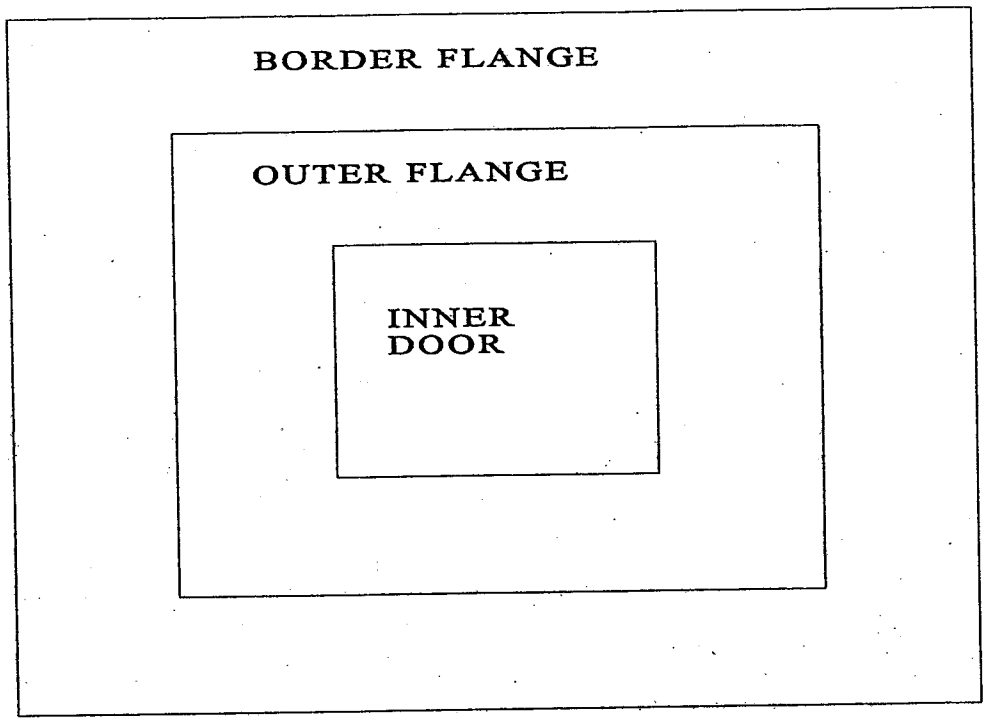
1. Panel boxes shall be fabricated from No. 12 USSG sheet steel of no more than three-piece construction, reinforced at the corners and with continuous welds. Boxes having a back whose area is larger than 16 square feet, shall be of No. 10 USSG sheet steel and reinforced to provide ample stiffness and to prevent buckling. Boxes shall be of sufficient size to afford a clear gutter space on all sides, of not less than six (6) inches.

2. PANEL CABINET INSTALLATION - When installed surface, or in panel closets, they shall be mounted on Kindorf channel, supported from floor slab to ceiling slab.

3. 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. CABINET TRIM - Trim for both lighting and power panelboards shall be door-in-door type installation as depicted in DETAIL A TRIM FOR LIGHTING AND POWER PANELBOARDS. Construction details are to be as described in the following paragraphs.



DETAIL A TRIM FOR LIGHTING AND POWER PANELBOARD

1. CABINET TRIM - The trim and doors for lighting and power panels shall be made of No. 12 USSG full finish sheet steel in one (1) piece. Cabinet trim larger than 16 square feet shall be made of No. 10 USSG. The inner door shall cover the circuit breaker section only and be provided with appropriate brass hinges. The outer door shall cover the entire gutter space and shall be attached to the border type flange with appropriate hinges. Both doors for power panels shall be provided with a New York City Lock No. 511S, with key change to No. 47 and two (2) keys. For lighting panels, the inner door shall be provided with a substantial catch. All hinges shall be of the concealed type. Locks shall be flush with trim. In addition, for panels requiring doors over 48 inches in height, furnish a vault handle and a 3-point catch arranged to fasten door at top, bottom and center.

2. The door shall close against a flange or rabbet to afford a dust tight fit. All space between the panel and the cabinet trim shall be closed by means of a sectional plate secured to the trim.

3. The border flange of the trim shall be fastened to the box with oval head screws finished to prevent corrosion or with approved trim clamps.

4. To facilitate installation of trim, a suitable angle iron shall be spot welded across the bottom of each trim to carry the weight of the trim while the holding screws are being put in place.

H. MOTOR CONTROL CENTERS - Motor centers shall be furnished by the Contractor as indicated in the Specifications or Contract Drawings, but shall be installed by the Contractor for Electrical Work.

I. 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 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.

J. SHOP DRAWINGS - showing all details of boxes, panels, etc., shall be submitted for approval.

K. 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.

L. 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 cast iron.

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.

PART I – MOTORS **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

SCOPE - 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 Code currently in effect. 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 present 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. MOTORS OF SAME MANUFACTURER - Unless expressly permitted otherwise by the Commissioner, all motors under the same Contract shall be manufactured by the same company. Exceptions may be granted in the case of motors of 1/4 horsepower rating and smaller, or for a motor that is an integral part of the equipment, with its housing especially built for this purpose.

C. STANDARDS OF COMPARISON - 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.

D. 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 Building Code of the City of New York 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.

E. 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.

F. 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.

G. 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.

H. 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.

I. MOTORS ON LIGHTING PANELS - The largest A.C. motor permitted on branch circuits of lighting panels shall not exceed 1/4 horsepower.

J. MOTORS RATED ½ horsepower and larger shall be polyphase.

K. TESTS

1. FACTORY INSPECTION - Electrical equipment and devices (except portable) not covered by standard Specifications or tests herein prescribed shall be inspected and witnessed on test at the factory with the tested equipment being completely assembled and connected under conditions approved by the Commissioner as equivalent to the actual working conditions. Suitability and

ruggedness of the design for the specified purpose will be a condition for acceptance.

2. SHOP TESTS - to determine the load performance of motors shall be made in accordance with Standard C-50, of the ASA. Motors shall meet the requirements of C-50 for insulation resistance, dielectric strength, efficiency and temperature rise. Efficiency (and power factor for A.C. motors) shall be established for 50, 75 and 100 percent of rated horsepower but for motors of 100 horsepower or larger, the 125 percent loading shall be included.

3. TEST REPORTS - The result of shop tests shall be submitted to the Commissioner for approval and shall be on forms approved by the City. The evaluated test data shall include a signed statement confirming the fact that the equipment meets the requirements of the standards of performance.

4. MANNER OF TEST - For motors of 100 horsepower or smaller, check tests against complete tests of similar motors will be accepted. For motors larger than 100 horsepower, complete tests for each motor furnished shall be made, and certified test data sheets shall be submitted for approval, unless shop tests are required by the Detailed Specifications.

5. PREFERRED METHODS - The efficiency of fractional horsepower motors shall be determined by the input-output method; for larger motors up to and including 100 horsepower, the separate loss method as specified in ASA Standards C-50 will be accepted unless otherwise required in the Specifications.

L. SPARE PARTS - The Contractor who furnishes motors, including fractional horsepower, shall provide the following spare parts and accessories in connection therewith:

1. BRUSHES - One (1) additional set of brushes for each motor equipped with them.

2. BEARINGS - For each group of three (3) and fraction thereof, of each type and size of motor, the Contractor shall furnish one (1) set of extra bearing linings or ball or roller bearings. Where less than three (3) of any type of motor is involved, one (1) set of extra bearings shall be furnished.

3. SPRINGS - One (1) set of brush springs used in slip ring motor or universal type motors.

4. WRAPPER MARKING - All parts shall be delivered neatly and securely wrapped and boxed, plainly tagged and marked for identification and reordering.

PART J - MOTOR CONTROL EQUIPMENT **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

SCOPE - This Section sets forth the requirements for motor controllers and associated devices, which are applicable to all Contracts under which motor control equipment is furnished or installed.

A. MANUFACTURER - All control equipment furnished under one (1) 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 "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 Contractor for Electrical Work full information relative to sizes and locations of apparatus furnished by them which require electrical connections.

Equipment being installed by the Contractor for Electrical Work shall be delivered to the Contractor for Electrical Work by other Contractors in proper time and sequence so that the Contractor for Electrical Work shall be able to meet the Contractor for Electrical Work working 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.

PART K - SCHEDULE OF ELECTRICAL EQUIPMENT

Schedule D requirements for electrical motor equipment 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. SCHEDULE D is included in the Addendum to the General Conditions. 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 Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

1.38 Safety

A. Each Contractor shall provide and maintain all necessary temporary closures, guard rails, and barricades to adequately protect all workers and the public from possible injury. Any Contractor requiring removal of these items shall be responsible for the replacement of same.

1.39 Interruption of Services and of Project Facilities

A. EVENING AND WEEKEND WORK - Where the work makes temporary shutdowns of the services unavoidable, they shall be made at night or on weekends or at such times that will cause no interferences with the established routines and operations of the projects 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.

B. INTERRUPTION OF PROJECT FACILITIES

1. The Contractor shall not interrupt any of the services of the project nor interfere with these 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 will the Contractor, 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. The facility operates 24 hours per day seven (7) days a week. Toilet facilities, water and electricity

must be operational at all times. No services of the project 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.

5. Contractors shall schedule their work to avoid noise interference that will affect the normal functions of the project. In particular, construction operations producing noises that are objectionable to the project functions will be scheduled at times of day or night, day of the week, or weekend, which will not interfere with the project personnel. Any additional cost resulting from this scheduling shall be borne by the specific Contractor.

6. The Contractor shall arrange to work continuously, including overtime, if required, to assure that services will be shut down only during the time actually required to make the necessary connections to the existing work.

7. The Contractor shall give ample written notice in advance to the Commissioner and project personnel of any required shutdown.

1.40 Separation of Work Between Trades (REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)

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 to the General Conditions. The delineation set forth in Schedule E shall be taken as specific instruction to the Contractor that it 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 any other trades who are to supply work to accommodate their installations.

1.41 Shop Drawing and Material Samples Schedule

A. SCHEDULE F – Schedule F sets forth all submittal requirements for shop drawings and material samples. Schedule F is included in the Addendum to the General Conditions. At the kick-off meeting, each Contractor must review this Schedule with the Commissioner's Representative and the Consultant. Within 10 days after the kick-off meeting, the 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 the Contractor must indicate a submission date which is at least 20 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 the Contractor must indicate a submission date for shop drawings and/or material samples of specified items or materials which is within 60 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 the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.

B. COORDINATION - The Resident Engineer for this project will coordinate and review the data submitted by various Contractors. Upon acceptance by the Resident Engineer, the Resident Engineer

will date and sign the schedule as approved and transmit it to the Consultant, Contractors and Project Manager within the Department of Design and Construction.

C. ARTICLE 11 - Thereafter, this schedule will be subject to the provisions of Article 11 of the agreement and must be strictly adhered to by the Contractor.

1.42 Specific Requirements

A. The work of this article shall be the responsibility of the Contractor for General Construction Work, unless otherwise indicated.

B. FIELD MEASUREMENTS

1. Each Contractor shall verify all dimensions and conditions on the job so that all work will properly join the existing work.

2. Each Contractor, before commencing work, shall examine all adjoining work on which each Contractor's 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 any Contractor from performing work that is below the required standard.

C. BORINGS **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

1. 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:

2. 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.

3. SOIL 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.

4. 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.

5. 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.

6. 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.

D. DEFERRED CONSTRUCTION

1. 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 under any other Contract in effect concurrent with the time allowed for doing and completing the work of the Contract, the Contractor shall defer construction work limited to adequate areas as approved by

the Commissioner.

2. The Contractor shall confer with the affected Contractors and ascertain arrangements, time and facilities necessary to be made by the Contractor in order to execute the provisions specified herein.

E. WORK FENCE ENCLOSURE **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

1. The Contractor shall furnish and erect a wood fence to the extent shown on the drawings enclosing the entire project on all sides. All materials used shall be new. Any permit required for the installation and use of said fence shall be borne by the Contractor.

2. THE FENCE shall be 7'-0" high with framing construction of yellow pine, using 4" x 4" posts on not more than 6'-0" centers, with three (3) rails of at least 2" x 4" size to which shall be secured boards, 3/4" x 6" tongue and groove, laid solid and surface and double nailed to each bearing. 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. The Contractor has the option of using ½" exterior grade plywood in lieu of the 3/4" x 6" tongue and groove boards.

3. 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 provide with tension or sag rods for the swinging sections.

4. PAINTING - The fence and gates shall be entirely painted on the street and public sides with two (2) coats of approved lead and oil paint. The below-grade section of the posts shall be first creosoted or given a coat of tar base paint. Black stenciled signs reading "POST NO BILLS" shall be painted on fence with three (3) inch high letters on 25 foot spacings for the entire length of fence on street traffic sides. Signs shall be stenciled five (5) feet above the sidewalk.

5. It shall be the obligation of the Contractor to remove all posters, advertising signs, and markings, etc., immediately.

6. Where sidewalks are used for "drive over" purposes for Contractor vehicles, a suitable wood mat or pad shall be provided for protection of sidewalks.

7. Where required, make provision for fire hydrants, lampposts, etc.

8. REMOVAL - When directed by the Resident Engineer, the fence shall be removed.

F. PUMPING

1. 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.

2. All pumps shall be maintained at all times in proper working order.

G. RESIDENT ENGINEER'S OFFICE

1. OFFICE SPACE IN EXISTING BUILDING **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

   a. The Resident Engineer will arrange for office space for sole use in the building where work is in progress. The Contractor for General Construction Work shall provide and install a lockset

for the door to secure the equipment in the room. The Contractor for General Construction Work shall provide two (2) keys to the Resident Engineer. After completion of the project the Contractor for General Construction Work shall replace the original lockset on the door and ensure its proper operation.

b. The Contractor for General Construction Work shall provide one (1) telephone, where directed, for the exclusive use of the Resident Engineer. The Contractor for General Construction Work shall pay all costs for telephone service for calls within New York City limits for the duration of the project. The telephone service shall continue for a period of 90 days following substantial completion.

c. The Contractor for General Construction Work shall provide the following equipment:

(1) 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) lockers, metal olive green or gray, 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 ½"D x 18"W in a grey finish by Art Steel No. 2904L or approved equal.
(2) 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.
(3) Two (2) metal wastebaskets, 13 inches square 15 inches high with rubber feet and corners by Art Metal Company No. 168 or approved equal.
(4) One (1) fire extinguisher one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
(5) 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.

2. TRAILER OFFICE **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

a. The Contractor for General Construction Work shall provide at its own cost and expense a trailer and install and connect all utility services to trailer within twenty (20) days of start of work. The trailer shall have equipment having the minimum requirements hereinafter specified. Any permit required for the installation and use of said trailer shall be borne by the Contractor.

b. The trailer shall remain the property of the Contractor for General Construction Work except that the file cabinets herein specified, shall become the property of the City of New York.

c. Trailer shall be office type trailer of the following general minimum dimensions:

1.	Length, overall:	35 feet.
2.	Length, inside:	32 feet.
3.	Width, overall:	8 feet.
4.	Width, inside:	7 feet, 5 inches.

d. Trailer shall be manufactured by International Trailer Company, Model No. 1 MU-35-D or Atlantic Trailer Corporation, Model No. F-36 or approved equal.

e. The exterior of the trailer and the wheels shall be given an approved coat of exterior enamel. The enamel finish coat shall be DUPONT orange lacquer or approved equal. 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 STRUCTURES	3-1/2"
RESIDENT ENGINEER'S OFFICE	2-1/2"

NOTE: In lieu of painting letters on trailer the Contractor for General Construction Work may substitute a sign constructed of a good quality lumber with the same type and size of lettering above.

f. All windows and doors shall have insect aluminum screens and wire mesh protective screening.

g. The interior shall be finished in 1/4 inch plywood. Plywood shall be finished in natural color, with two (2) coats of varnish or lacquer.

h. The interior shall be divided by partitions into one (1) large room in front of trailer, and a private office approximately 6' x 7' at rear of trailer and a washroom located adjacent to the private office.

i. The washroom shall be equipped with a flush toilet, wash basin with two (2) faucets, medicine cabinet, complete with supplies by Hospital Supply and Watters Labs., Inc., Model No. 1 or approved equal 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.

j. The heating system shall consist of thermostatically controlled electric baseboard heaters capable of delivering not less than 30,000 BTU per hour and heaters shall be as manufactured by Chromalox or approved equal, sized per area with individual approved thermostats.

k. The trailer shall be equipped with an approved two-circuit, 110-120 volt armored cable wiring system of adequate capacity complete with entrance connector with provision for grounding, enclosed fused service switch and branch circuit fuse box. The circuits for lighting, water heater, heater and convenience outlets, etc, shall be two-conductor, No. 12. The circuits for the space heaters shall be sized minimum No. 12 wire led from individual circuits in the branch circuit fuse box. Metal boxes shall be provided at all outlet points. All wiring shall conform to the requirements of the Electrical Code of the City of New York for armored cable wiring systems.

l. Lighting to be furnished by a minimum of four (4) 48 inch, single tube, fluorescent fixtures for the large rooms and an incandescent fixture for the washroom. Lighting fixtures shall be provided with built-in pull-chain switches. A minimum of six (6) duplex convenience outlets shall be installed; four (4) in the larger room and two (2) in the smaller room. These outlets shall be in addition to connections for electric space heaters and heaters for domestic hot water.

m. In addition to the washroom and private office, the following shall be built-in to the trailer:

1. The drafting or reference table at least 60 inches long by 36 inches wide with cabinet below, head shelf at each end of the trailer, wall type plan rack at least 42 inches wide and wardrobe opposite washroom.

n. The following movable equipment shall be furnished:

1. Four (4) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Four (4) lockers, metal olive green or gray, 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 ½" D x 18"W in a grey finish by Art Steel No. 2904L or approved equal.

2. One (1) 6000 B.T.U. and one (1) 9000 B.T.U. air conditioner. Wiring for the air conditioners shall be minimum No. 12 AWG fed from individual circuits in the fuse box.

3. Two (2) metal wastebaskets, olive green or grey finish, 13 inches square 15 inches high with rubber feet and corners by Art Metal Company No. 168 or approved equal.

4. One (1) fire extinguisher one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.

5. 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.

o. TRAILER TEMPORARY SERVICE - Plumbing and electrical work required for the trailer will be furnished and maintained as below.

1. PLUMBING WORK - shall include all water supply and drainage piping required for a complete installation. Contractor to provide a temporary water service from the City's water main and extend in the trailer and properly connect up all fixtures requiring water supply. Provide all necessary soil, waste, vent and drainage piping.

a. Plumbing Contractor to frost-proof all water pipes to prevent freezing.

b. REPAIRS, MAINTENANCE - The Plumbing Contractor provide repairs when and as required for a period of thirty (30) days after the date of substantial completion acceptance.

c. DISPOSITION OF PLUMBING WORK - At the expiration of the time limit set forth in Subparagraph 3, the water drainage connections and piping to the office trailer shall be removed and shall be plugged at the mains. All piping shall become the property of the Contractor for Plumbing Work and shall be removed from the site, all as directed. All repair work due to these removals shall be the responsibility of the Contractor for General Construction Work.

2. ELECTRICAL WORK - The Contractor for Electrical Work shall furnish, install and maintain a temporary electric feeder to the trailer to be used by the Resident Engineer immediately after it is placed at the job site.

a. The temporary electric feeder shall be at least three (3) No. 6RH wire and shall be protected by a 60 Ampere fused safety switch, complying with codes and utility requirements having jurisdiction.

b. Make all arrangements and pay all costs to provide electric service.

c. 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 a period of thirty (30) days after the date of substantial completion acceptance.

d. Disposition of Electric Work: At the expiration of the time limit set forth, the temporary feeder, safety switch, etc., shall be removed and disposed of as directed.

e. All repair work due to these removals shall be the responsibility of the Contractor.

p. MAINTENANCE

1. The Contractor for General Construction Work shall provide and pay all costs for hot and cold water, heat and fuel and regular daily janitor service. Furnish toilet paper, cloth towels and soap and maintain the field office in first-class condition, including all repairs, until 30 days after the date of substantial completion acceptance.

2. Provide fire, extended coverage and vandalism, malicious mischief and burglary and theft

insurance coverage for the Resident Engineer's field office equipment in the amount of $10,000. All insurance coverage shall be provided by a company licensed and authorized to do business in the State of New York. Such coverage must, under the loss payable clause or by endorsement thereon, state the following: "loss, if any, payable to the City of New York."

3. At 30 days after the date of substantial completion acceptance, or sooner as directed by the Commissioner, the Contractor for General Construction Work shall have all services disconnected and capped to the satisfaction of the Resident Engineer.

q. The Contractor for General Construction Work shall provide and pay all costs for the following telephone services for the Resident Engineer's trailer:

1. Two (2) desk phones

2. One (1) wall phone (with six (6) foot extension cord) at plan table.

3. A remote bell located on outside of trailer

4. The telephone service shall continue for a period of 90 days following substantial completion.

r. Should it become necessary to relocate the trailer or move the field office from one (1) location to another, Contractor for General Construction Work shall be responsible for move or moves and of reconnecting all utilities described above at new location, and shall assume all costs incurred.

s. PERMITS - The Contractor for General Construction Work shall make the necessary arrangements and obtain all permits required for this work.

t. The Contractor for General Construction Work 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 Contractor for General Construction Work must be approved by the Commissioner before the area is rented. All insurance maintenance and equipment required for trailer field office shall also apply to rented spaces.

H. ADDITIONAL EQUIPMENT FOR THE RESIDENT ENGINEER **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

1. The Contractor for General Construction Work shall supply photo equipment not to exceed $250. Said equipment to be specified by Resident Engineer. At the completion of the project, the equipment shall become the property of the City of New York.

2. The Contractor for General Construction Work shall provide a copy machine for paper sizes 8½ x 11 & 8½ x 14. Copier shall remain at job site 30 days beyond the Substantial Completion date.

3. The Contractor for General Construction Work shall furnish a fax machine and a telephone answering machine at commencement of the project. All materials shall be new, sealed in manufacturer's original packaging and shall have manufacturers' warrantees. All items shall remain the property of the City of New York at the completion of the project.

4. Computer Workstation (Refer to the Addendum to the General Conditions for the number of Computer Workstations to be provided):

Computers shall be provided for all contracts that have a total duration of 180 Consecutive Calendar Days (CCDs) or more, as set forth in Schedule "A". Contracts that have a total duration of less than 180 CCDs shall not require computers. Computer workstations shall be provided for

the duration of the contract.

(1) Personal Computer(s) - Workstation Configuration.

(a) Make and Model: Dell, Gateway, Toshiba, HP, IBM, or an approved equal. (Note: an approved equal requires written approval of the Assistant Commissioner of ITS.)

(b) Processor: 3.0 GHz Pentium 4 or faster computer - Single Processor.

(c) System RAM: Minimum of 1 GB (Gigabytes) of SDRAM or DDR.

(d) Hard Disk Drive(s): 80 GB (Gigabytes) or larger.

(e) CD-RW: Internal CD-RW, 48x Speed or faster.

(f) 16xDVD+/RW: 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, 2 USB Ports. Serial Ports must consist of UART 16550 Chip or better.

(h) Video Display Card: PCI Interface with a minimum of 64 MB of RAM.

(i) Monitor: 17" TFT LCD monitor.

(j) Available Exp. Slots: System as configured above shall have at least two (2) full size PCI Slots available.

(k) Fax/Modem: Internal Fax/Modem 56 Kbps speed, featuring 3COM or US Robotics Chipset and supporting a minimum of V.92 and MNP5 compliant. Integrated 10/100/1000 Ethernet.

(l) Other Peripherals: Optical scroll Mouse, 101 Key Keyboard, Mouse Pad and all necessary cables.

(m) Software Requirements: Microsoft Windows XP Professional, Microsoft Office 2003 Professional, Microsoft Project 2002 Professional, Adobe Acrobat reader, Anti-Virus software package with one year updates subscription, Win Zip and Auto Cad 2008 LT.

(2) All field offices requiring computers shall be provided with the following:

(a) One (1) broad-band internet service account. This account will be active for the life of the project.

(b) One (1) 600 DPI HP Laser Jet Printer (twelve (12) pages per minute or faster) with one (1) Extra Paper Tray (Legal Size)

(c) All necessary Cabling

(d) Storage Boxes for and Blank CDs/DVDs

(e) Printer Table

(f) UPS/Surge Suppressor combo

(3) 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 Contractor is responsible for rectifying all computer problems or equipment failures within one (1) business day.

(4) An adequate supply of blank CD's/DVD's, and paper and toner cartridges for the printer shall be provided by the Contractor, and shall be replenished by the Contractor as required by the Engineer.

(5) It is the 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.

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 Raul Canabal, Assistant Commissioner of Information Technology Services at 718-391-1668.

I. PUBLIC TELEPHONE **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

1. The Contractor shall provide a public telephone located on the site, where directed, for the duration of the Contract.

J. HEAD PROTECTION (HARD HATS)

1. The 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 office of the Resident Engineer.

2. Upon completion of the project, the helmets shall become the property of the Contractor.

K. RODENT AND INSECT CONTROL

1. DESCRIPTION - The General 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:

   a. Wet areas within the project area, including all temporary structures.

   b. All exterior and interior temporary toilet structures within the project area.

   c. All Field Offices and shanties within the project area of all Contractors and the Department of Design and Construction (DDC).

   d. 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.

   e. Any other portion of the premises requiring such special attention.

2. MATERIALS: 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

3. PERSONNEL: All pest control personnel must be supervised by an exterminator licensed in categories 7A & 8.

4. METHODS

a. Application and dosage of all materials shall be done in strict compliance with the manufacturer's recommendations.

b. Under the Maintenance of Site item (section 1.42.L), any unsanitary conditions, such as uncollected garbage or debris, resulting from the General Contractor's activities which will provide food and shelter to the resident rodent population shall be corrected by the General Contractor immediately after notification of such condition by the Commissioner

5. RODENT CONTROL WORK

a. 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 streambanks. Live traps must be used in these seventy-five (75) foot buffer zone areas and within wetland and woodland areas.

b. 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.

c. 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.

d. The General Contractor shall be responsible for collecting and disposing of all trapped and poisoned rodents found in live traps and tamper proof bait stations. The General Contractor shall also be responsible for posting and maintaining signs announcing the baiting of each particular location.

The General Contractor, under his/her Maintenance of Site operations, shall be responsible for the immediate collection and disposal of any visible rodent remains found on streets or sidewalks within the project area.

e. It is anticipated that public complaints will be addressed to the Commissioner. The General 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.

f. 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.

6. EDUCATION & TRAINING

a. The General 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 General 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.

b. Prior to application of any chemicals, the General 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.

7. RECORDS AND REPORTS

a. The General 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.

b. The General Contractor shall maintain records of all locations baited along with the type and quantity of rodenticide and insecticide bait used.

L. SITE SECURITY/PERIMETER SIGNAGE

1. In order to properly convey notice to persons entering upon a City construction site, the Contractor shall furnish and install a sign at the entrance (gates) as follows:

NO TRESPASSING

AUTHORIZED PERSONNEL ONLY

---

2. 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).

M. MAINTENANCE OF SITE AND ADJOINING PROPERTY

1. Take over and maintain the site, after order to start work.

2. Until the work of the Contract is completed and accepted, the 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. The Contractor shall, at its own expense, except as otherwise specified, protect same and maintain them in least as good a condition as that in which the Contractor finds them.

3. 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.

4. Provide and keep in good repair all bridging and decking necessary to maintain vehicular and pedestrian traffic.

5. The Contractor shall also remove all snow and ice as it accumulates on the sidewalks within the Contract Limits Lines.

N. SAFETY PRECAUTIONS FOR CONTROL CIRCUITS

1. Control circuits, the failure of which will cause a hazard to life and property, shall comply with the New York City Dept. of Buildings, Bureau of Electrical Control requirements.

O. OBSTRUCTIONS IN DRAINAGE LINES

1. The 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 Contractor for General Construction Work.

P. MAINTENANCE OF PROJECT SITE

1. Take over and maintain all project areas, after order to start work.

2. Until the work of the Contract is completed and accepted, the 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 Contractor's own expense, except as otherwise specified, protect same and maintain them in at least as good condition as that in which the Contractor finds them.

3. 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.

4. The Contractor shall keep the space for the Resident Engineer in a clean condition.

Q. PROJECT SIGN AND RENDERING
PART A – PROJECT SIGN

1. Responsibility: The Contractor shall produce and install one (1) project sign which shall be posted and maintained upon the site of the project at a point and in a position where directed by the Commissioner. The 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 same in first class condition and in proper position. Prior to fabrication, contractor shall submit an 8-1/2" x 11" color match print proof from the sign manufacturer of completed sign for approval by the Commissioner.

2. Sign Quality: The 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 Contractor shall commence production and installation of the sign.

4. Removal: At the completion of all work under the Contract, the 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 prefinished 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 ½" below edge of panel and 8" on center. The U-shaped aluminum channel 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. All visual components of the sign are in an Adobe *.pdf file, which is provided by the

Commissioner's representative. The file is to be opened in Acrobat Professional or Acrobat Approval in order to be saved with project information. 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. At no point in the update, saving or renaming of the file should it be locked by any user. The digital file shall be provided by DDC to the Contractor (on a CD or via E-mail) for printing.

b. The DDC *.pdf file with names provided by the commissioner shall be reproduced at the Sign Panel size of 4' x 8' on 3M High Performance Vinyl or approved equal. The sign manufacturer is required to print from the Acrobat *.pdf provided, and must match the following colors specified by Pantone: 3025 C, 119 C, 131 C, 1805 C, 1817 C in their exact locations as indicated in the *.pdf file, and on the DDC website: www.nyc.gov/buildnyc.

c. Color shall be created in a four-color process to reproduce Pantone Colors (per Pantone formula).

1. Pantone color 3025 C (C-100, M-17, Y-0, K-51).

2. Pantone color 119 C (C-0, M-12, Y-100, K-49).

3. Pantone color 131 C (C-0, M-32, Y-100, K-23).

4. Pantone color 1805 C (C-0, M-91, Y-100, K-23).

5. Pantone color 1817 C (C-0, M-90, Y-100, K-66).

The typeface, Helvetica shall be used in all text-fields as is specified in the settings of the Acrobat *.pdf.

Note: 3M High Performance Vinyl or equivalent shall be guaranteed for nine (9) years. Guarantee must cover fading, peeling, chipping or cracking.

PART B – PROJECT RENDERING **(REFER TO THE ADDENDUM TO THE GENERAL CONDITIONS FOR THE APPLICABILITY OF THIS ARTICLE)**

1. Responsibility: In addition to the Project Sign, the Contractor shall furnish and install one (1) sign showing a rendering of the project. From an approved image file provided by the DDC, the Project Rendering is to be sized, printed, and mounted in an identical manner as described in Part A above for the Project Sign. Any area of the 4' X 8' panel area not filled by the rendering shall be printed in Pantone color 3025 (c-100, M-17, y-0, K-51). 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 Contractor shall remove and dispose of the project rendering away from the site.

R. PLANT PEST CONTROL REQUIREMENTS and TREE PROTECTION REQUIREMENTS

1. Plant Pest Control Requirements: The Contractor for General Construction Work (the "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 Contractor is referred to: (1) Part 139 of Title 1 NYCRR, Agriculture and Markets Law, Sections 18, 164 and 167, as amended, and (2) State Administrative Procedure Act, Section 202, as amended.

a. 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 Contractor or its sub contractor 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.

b. 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 Contractor.

c. Prior to commencement of tree work, the Contractor shall submit to the Commissioner a copy of a valid Asian Longhorned Beetle compliance agreement entered into with NYSDAM and the Contractor or its sub contractor performing tree work. If any host material is transported from the quarantine area the 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.

d. 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 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 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.

2. Tree Protection Requirements: The 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.

a. 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 above; (3) evaluation of the general health and condition of any infected plant material.

b. 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.

c. 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.

1. 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).

2. 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.

3. 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.

d. Tree Protection Plan: The Certified Arborist shall prepare, and the 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 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 article, 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.

3. 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 Contractor's bid for the Project.

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FMS ID: **EP6-KENT2**

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
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 WORK

Rehabilitation and Upgrade of DEP Shaft Maintenance Building

LOCATION: **356 Flushing Avenue**
BOROUGH: **Brooklyn 11215**
CITY OF NEW YORK

Adams European Contracting Inc.
Contractor

Dated April 10, 20 14

Approved as to Form
Certified as to Legal Authority

Acting Corporation Counsel

RL 9/27/13

Dated September 27, 20 13

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

PROJECT ID: **EP6-KENT2**

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

ADDENDUM TO THE GENERAL CONDITIONS

SPECIFICATIONS

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR:

Rehabilitation and Upgrade of DEP Shaft Maintenance Building

LOCATION: **356 Flushing Avenue**
BOROUGH: **Brooklyn 11215**
CITY OF NEW YORK

CONTRACT NO. 1 **GENERAL CONSTRUCTION WORK**

Environmental Protection Agency

Deborah Berke & Partners Architects LLP

Date: **August 13, 2013**

14-024

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

ADDENDA CONTROL SHEET

BID OPENING DATE: December 6, 2013

PROJECT No. : EP6-KENT2

TITLE: Rehabilitation and Upgrade of DEP Shaft Maintenance Building

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	GENERAL COUNSEL
#1 Revised Bid Opening Date; Questions from Bidders and Responses to Questions; Revisions to the Specifications; Drawings		11/14/13		
#2 Revised Bid Opening Date; Revisions to the Bid Booklet; Questions from Bidders and Responses to Questions		11/25/13	[signature]	[signature] 11/26/13

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

November 25, 2013

ADDENDUM No. #2

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

EP6-KENT2
Rehabilitation and Upgrade of DEP Shaft Maintenance Building

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. **Revised Bid Opening Date:**
   The Bid Opening for the Contract described below scheduled for November 25th, 2013, at 2:00pm is rescheduled to December 6th, 2013, at 2:00pm.

   Contract 1 – General Construction Work.

2. **Revisions to the Bid Booklet:**
   Delete Pages 13-3 & 13-4 and replace with pages 13-2 &13-3, included with this Addendum.

3. **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) 391-2200, (718) 391-1283, or by fax at (718) 391-2615.

David Resnick, R.A.
Deputy Commissioner

_____
Name of Bidder

By: _____

DC PROJECT #: EP6-KENT2

PROJECT NAME: Rehabilitation and Upgrade of DEP Shaft Maintenance Building

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Please provide the size of the 7 pin oaks that are going in the new tree pits.	The 7 pin oaks shall be 3 to 4 inch caliper.
2	Please reference Drawing SP-001.00, General Note 1 & Specification Section 21 13 00-12. Drawing SP-110.00 and SP-200.00 indicate 5"x3"x3". Please confirm Siamese size to be 6"x3"x3"	Siamese to be 6"x3"x3".
3	Drawing SP-100.00 top left corner & SP-130.00 top left corner show specific areas enclosed inside dash lines. Please clarify.	Both represent area of most hydraulically demanding for sprinkler hydraulic calculations. Please disregard area on SP-110.00
4	Please provide compressor size for Dry Pipe Valve.	Similar to model LT29050, 1/2 HP, with tank by General Air Products. Or approved equal.
5	Drawing P-200.00 – Ejector pumps 1 & 2 are shown to be installed on the cellar floor (not in the pit recessed into the cellar floor slab). Drawing P-400.00 on the Part Plan – Cellar indicates 4'-0" x 4' -0" x 5' -0" deep pit. Please clarify.	Sump pumps SP-1 and SP-2 are located in pit in cellar pump room 005 in a pit as per specifications and details. Duplex sets of sewage ejectors EJ-1 and EJ-2 are located in fiberglass basins in cellar storage room 002 and cellar boiler room 004.
6	Drawing A-857.00 shows exterior decorative frames. Where are these located on the drawings?	Refer to A-301.00 and A-302.00. Decorative frames are to be located at existing blocked up window openings.
7	Drawing. FO-100.00 indicates steel lintels to be cleaned and painted. Are these currently exposed? If not, state what the covering is composed of, and if it has to be restored.	The cellar lintels are exposed.
8	The bid booklet is missing page 13-2 of the unit prices. Please provide.	Bid booklet pages 13-3 & 13-4 are mislabeled. Page 13-3 is revised to 13-2 and Page 13-4 is revised to 13-3. Revised pages are attached with this Addendum.
9	Reference Specification Section 055000 Metal Fabrications—1.02-1. Metal non-slip treads/nosing. See detail 4/A-710, which is showing a complete tread/riser covering. The material specified does not fit that description. The treads only have 1-1/8" nosings. Please clarify what to provide.	Please provide treads as per the drawings.

05 12 00	29	Provide Web Reinforcing + Stiffener Angles X2 (Each Side Plus Bolts)Installed	12	LF / Girder		
05 12 00	30	Provide Top Or Bottom Angles That Make Up Flange – 300lf X 2- (Each Side)	17	LF / Girder		
05 12 00	31	Provide Miscellaneous Rivets	2000	EA		
05 12 00	32	Provide Filler Beams As Shown on the Schedule On S400	40	EA		
05 74 00	33	Cast Iron Spandrel Panel Cap	2	EA		
05 74 00	34	Cast Iron Spandrel Panel - Repair	4	EA		
05 74 00	35	Cast Iron Spandrel Panel - Replace	6	EA		
05 74 00	36	Cast Iron Spandrel Panel Base	4	EA		
05 74 00	37	Cast Iron Right Side Column, Upper Section	4	EA		
05 74 00	38	Cast Iron Left Side Column, Upper Section	4	EA		
05 74 00	39	Cast Iron Center Column, Upper Section	4	EA		
05 74 00	40	Cast Iron Center Column, Lower Section	4	EA		
05 74 00	41	Cast Iron Right Side Column, Lower Section	4	EA		
05 74 00	42	Cast Iron Left Side Column, Lower Section	4	EA		
05 74 00	43	Cast Iron Header Above Lower Window	2	EA		
06 00 00	44	Perform Pull Out Tests On Existing Sleepers	20	EA		
06 00 00	45	Remove And Replace Deteriorated Sleepers On Sloped Roof Made Visible After Removal Of Plywood Sheathing And Shingle Roofing Under Terms And Conditions Of The Base Bid	3400	LF		

Total Amount of Unit Price Work _____*

* Insert Total amount of Unit Price Work on line C of Bid Form

Note: All quantities are approximate

BID FORM

PROJECT ID: EP6-KENT2

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 items (B) and (C) 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 Material Sold and Delivered		Total Price For Labor		
$_____	+	$_____	Total Price for Item A=	$_____

B. ALLOWANCE for Incidental Asbestos Abatement (Section 028013 of the Specifications) **$30,000.00**

C. AMOUNT for Unit Prices (from pages 13-0, 13-1, & 13-2) for extra work items _____

TOTAL BID PRICE (Add A + B + C) (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 17) 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: Secretary of Corporate Bidder
(Corporate Seal)

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

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

ADDENDA CONTROL SHEET

BID OPENING DATE: November 25, 2013

PROJECT No. : EP6-KENT2

TITLE: Rehabilitation and Upgrade of DEP Shaft Maintenance Building

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	APPROVED BY: GENERAL COUNSEL
#1 Revised Bid Opening Date; Questions from Bidders and Responses to Questions; Revisions to the Specifications; Drawings		11/14/13	[signature]	[signature]

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

November 14, 2013

ADDENDUM No. #1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

EP6-KENT2
Rehabilitation and Upgrade of DEP Shaft Maintenance Building

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. **Revised Bid Opening Date:**
   The Bid Opening for the Contract described below scheduled for November 19th, 2013, at 2:00pm is rescheduled to November 25th, 2013, at 2:00pm.

   Contract 1 – General Construction Work.

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

3. **Revisions to the Specifications:**
   See Attachment B.

4. **Revisions to the Drawings:**
   See Attachment C.

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) 391-2200, (718) 391-1283, or by fax at (718) 391-2615.

David Resnick, R.A.
Deputy Commissioner

_____
Name of Bidder

By: _____

DDC PROJECT #: EP6-KENT2

PROJECT NAME: Rehabilitation and Upgrade of DEP Shaft Maintenance Building

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Drawing A-240 is calling for fall protection - detail 2/A-240. Provide details and spec.	Refer to Spec Section 07 60 00. See attachment B - Revisions to the Specifications.
2	Drawing A-303 should the note regarding Cast Iron restoration read "East" façade in lieu of South facade?	Correct.
3	Drawings A-050 and P-100 call for a new combined water service. Div. 33 - Utilities, is not use per the table of contents. Do we provide services?	Yes, the combined water service is part of the scope. Refer to Spec Section 22 05 00.
4	There are no finish types per the list of appliances. Please provide.	Please refer to the NEW Appendix #8 Finish Types (Included with this Addendum).
5	Drawing A-221 refers to detail 5/A-851. This detail does not exist. Please provide.	Please refer to detail 4/A-851 in lieu of 5/A-851. See attachment C – Revisions to the Drawings
	Drawing S-102: Bottom paragraph of "General Notes for Sheet" – What do abbreviation PJP and CJP stand for?	On drawing S-102, PJP stands for Partial Joint Preparation and CJP stands for Corner Joint Preparation as defined in the AWS - Structural Welding Code.
7	Drawing S-103: A. Typical Moderate Concrete Slab Patch @ Underside – In the description of the work to be done, what does B.O. stand for? (By others?) B. Please clarify last sentence "allow for 20% of noted S.F. of spalled concrete to be removed in addition to prepared areas B.O." 1. 20% of the areas to be repaired. What is the total area to be repaired? 2. What is the total area of spalled concrete which was prepared B.O.?	Please refer to marked up sketch for drawing S-103 clarifications. (Included with this Addendum)
8	As per Table of Contents of the Specifications, the List of Appendices includes "Finish Types," but we could not find it. Please provide us with the Appendix "Finish Types"	Please refer to the NEW Appendix #8 Finish Types (Included with this Addendum).
9	Drawing. S-600: A. What is the material used on the steel beams where the legend indicated full removal of fireproofing for repair? B. What type of materials are the existing bearing walls built of?	A. The existing fireproofing is cementious coating over steel mesh. B. Existing bearing walls are stone & brick masonry.

10	Drawing. DM-100 indicates only 4 columns, 107,106, 40, and 95, are to have 18" of the bottom encasement removed for inspection purposes. Drawing. FO-100 has a clouded note to expose all column bases (except for columns at the elevator pit). Which is correct?	Drawing FO-100 is correct.
11	Drawing DM-110 Note #14 and DM-120 Note #10 – Preserve fireproofing when possible inside columns. Where is the legend indicated on both of these drawings?	Delete note #14 on drawing DM-110 and Note #10 on drawing DM-120.
12	The window specification 085110-4, Part 2 – Products, 2.01 B. calls for approved or equal unites to be used. Traco NX-280/FW-C50 is a 2 ¼ deep fixed aluminum window. The detail of same 4/A-851 shows a 6" deep curtain wall framing system. Please clarify which is correct.	The products listed in the specification section 085110 are correct.
13	The Storm Windows to be applied to the interior of the 3 fixed window numbers 28-2, 29-2 & 30-2 are noted as Single Hung. The windows they are being applied to are fixed. Please clarify function. Also, will a factory installed fixed panel on the prime window be acceptable in lieu of storm window?	Storm windows are fixed. For purposes of bid, substitutions for this item are not acceptable.
14	Spec. Section 060000 Rough and Finish Carpentry: Can you please provide a detail of the provision written in Part 1.02, Paragraph A.4.b?	Spec Section 06 00 00 / Part. 1.02, Paragraph A.4.b. will be deleted.
15	Please clarify window number on plans, example 46-1 or 43-3, with listing in specifications, 46-1/2 or 43-1/3. Window numbers on plans do not complement window numbers in the specs.	The drawings and specifications are complementary. 46-1/2 refers to window 46-1 and 46-2.
16	Drawing S-210: Please identify the built-up girders where all of the fireproofing must be removed from the flange and the web. Please indicate the depth of the beam and the size of the flange.	Please refer to drawings S-600, 3/S-400, and the Repair Schedule on drawing S-400 for scope clarifications. The original filler beam depths are unknown. For purposes of bid, assume 12" depth.
17	Spec section 034113 Precast Concrete Plank: Provide sizes, details of support, topping requirements, reinforcing, weld plates etc. Is the quantity required 5% of the total pitched roof area, or just as infill for skylight and ventilators?	Please refer to drawing 1/S-240 for repair at plank infill. The quantity is 5% of the total pitched roof area.
18	Drawing S-240 show infills to be concrete on metal deck. Where does the precast plank go?	Please refer to drawing 1/S-240 for scope of the repair.
19	What does the abbreviation E.OR mean? See Legend on drawing S-300.	Engineer of Record

20	Drawing S-300 Legend calls for the G.C. to provide a "non-destructive testing company" to evaluate the stone lintels. Shouldn't this be the owner's responsibility?	Contractor to provide for non-destructive testing of existing stone lintels to enable the commissioner to evaluate their condition.
21	Drawing M-200 Room 001 - note "remove existing LPS piping in the room." No piping is identified. What is the size and quantity? Also, this room is noted as NIC on DM-100. Please clarify.	Slab work above Room 001 and any associated work are part of the scope of work. Room 001 is the Remediation Room which was not accessible at the time of the site visits. However, it is assumed that the pipe removal be based on 5" LPS and that it runs to the radiators at the two windows. This will be field verified.
22	Drawing DM-110 note 2 makes reference to removal of MEP items suspended directly from the slab. Drawing M-200 is only showing LPS pipe and Drawing E-100 only shows conduit. Is this correct?	That is correct for the LPS pipe shown and noted on drawing M-200. The E-100 drawing indicates conduit to be removed from the existing slab / to be replaced on the new slab with this symbol "--x---x---x--".
23	We are assuming that pipes and conduit marked with an "X" are to be removed. There is no legend.	LPS piping marked with an "X" is to be demolished. Conduit as marked above is to be demolished and replaced.
24	Drawing A-351 shows a stucco finish from beyond column line A to the corner. Drawing A-304 shows brick. Which is correct?	Drawing 2/A-304 is correct.
25	Please clarify stucco quantities. Should we bid the actual area shown on the drawings or provide pricing based on the total listed in the legend on drawing A-302?	The base bid should be based on the quantity listed in the Masonry Restoration Legend. In addition, provide a Unit Price as per Unit Price Schedule included in the Bid Booklet.
26	Detail 01/A-710 note "existing wall mounted handrail to remain". Spec section 055000- Scope item 2 "modify and extend wall mounted railing". Which is correct? If modification required, provide details.	Existing wall-mounted handrails are to remain.
27	Spec. section 055000 Scope of Work item 4 - "Provide channel and angle door frames at Replaced overhead door units". The detail referenced 1/A-851 shows no frame. Provide details.	Spec Section 05 50 00 / Part. 1.02, Paragraph A.4 is to be deleted. Refer to detail 1/A-851 for detail. See attachment B - Revisions to the Specifications.
28	Detail 3/A-701 shows a checkered plate landing at the bottom on Stair D. What is the extent? In addition, is the platform at the top of the stair also checkered plate? This also applies to Stair G.	Stair D – Treads/Landing 1-9 are checkered plate. Refer to the Finish Schedule for the flooring of Office 110. Stair G - Treads/Landings and Ramp are all checkered plate. The checkered plate landing abuts the existing concrete floor at opening 2-15. Please allow for an ADA compliant threshold at this transition
29	Spec. Section 055000, Scope of Work #7 - "provide new stair and railing system from office 113". There is no new stairs shown. As per drawing DM-110, the existing stair is to remain. If a new stair is required, please provide detail.	Spec Section 05 50 00 / Part. 1.02, Paragraph A.7 is to be deleted. See attachment B - Revisions to the Specifications.

30	Drawing A-240 - note "metal grate flooring to be reinforced at duct penetrations". Please provide detail.	Existing structure of grate flooring is unknown. Reinforcement details will be provided once the Commissioner has evaluated the condition.
31	Please provide the make and model of the light fixture referenced in Note 2 of Drawing E-200.	Please provide the following: LSI Industries Vaportight EG, 2 lamp, 8' length, pendant mount, or approved equal from below manufacturers: 1. LSI Industries 2. Lumax Lighting 3. FSC Lighting

DC PROJECT #: EP6-KENT2

PROJECT NAME: Rehabilitation and Upgrade of DEP Shaft Maintenance Building

ATTACHMENT B – REVISIONS TO THE SPECIFICATIONS

ADD the following to Section 07 60 00 - Flashing and Sheet Metal

1. ADD Scope Item 1.02.A.8 - Roof edge protection at elevator bulkhead.

2. ADD Submittal Requirement 1.05.E as follows:
   E. Manufacturer's data sheets on roof edge protection devices, including:
      1. Preparation instructions and recommendations.
      2. Storage and handling requirements and recommendations.
      3. Installation methods.

3. ADD Article 2.08 - ROOF EDGE PROTECTION DEVICES
   A. For purposes of establishing a standard of quality and not for the purposes of limiting competition, the basis of this specification is upon "SafetyRail 2000" system as manufactured by BlueWater Mfg., Inc. or equal by Garlock Equipment Company; Kee Safety; or Safety Rail Systems.
      1. Standards: System shall have top and mid rail in accordance with OSHA Standards - 29 CFR 1910.23 (a)(2).
      2. Structural Load: 200 lb (90.7 kg), minimum, in any direction to all components in accordance with OSHA Regulation 29 CFR 1926.502.
      3. Height: 42 inches (1067 mm), minimum.
      4. Railings: 1-5/8 inch (41 mm) O.D. hot rolled pickled electric weld tubing, free of sharp edges and snag points.
      5. Mounting Bases: Class 30 gray iron material cast with four receiver posts. Provide rubber pads on bottom of bases.
      6. Receiver Posts: Shall have a positive locking system into slots that allow rails to be mounted in any direction. Friction locking systems are not allowed. Receiver posts shall have drain holes.
      7. Finishing Rail: D-shaped railing extension for ladder landings, length of rail section and D-loop as indicated on the Drawings.
      8. Hardware: Securing pins shall be 1010 carbon steel, zinc plated and yellow chromate dipped. Pins shall consist of collared pin and lanyard that connects to lynch pin.
   B. Factory finished powder coat paint; Safety yellow.
   C. Assemble components with joints tightly fitted and secured. Accurately form components to suit installation.

DELETE the following from Section 06 00 00 – Rough and Finish Carpentry

1. DELETE from Article 1.02 Description of Work
   Part. 1.02, Paragraph A.4.b

DELETE the following from Section 05 50 00 – Metal Fabrications – Miscellaneous/ Ornamental Metals

DELETE from Article 1.02 Description of Work
Part. 1.02, Paragraph A.4
Part. 1.02, Paragraph A.7

APPENDIX #8

1. REVISE: Footer revise from "Appendix 8: FINISH SCHEDULE" to "Appendix 9: FINISH SCHEDULE"

2. ADD: New "Appendix 8: FINISH TYPES" (Included with this Addendum)

DC PROJECT #: EP6-KENT2

PROJECT NAME: Rehabilitation and Upgrade of DEP Shaft Maintenance Building

ATTACHMENT C – REVISIONS TO THE DRAWINGS

1. **REFER TO DRAWING A-221.00:**
   Delete "5/A-851" and replace with "4/A-851"

2. **REFER TO DRAWING DM-110.00**
   Delete note #14

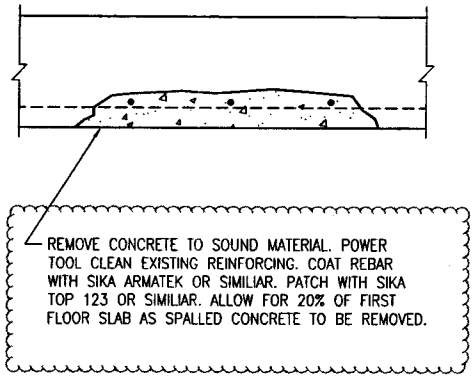
3. **REFER TO DRAWING DM-120.00**
   Delete note #10

E[redacted]ENT2: DEP Shaft Maintenance Building
Finish Types

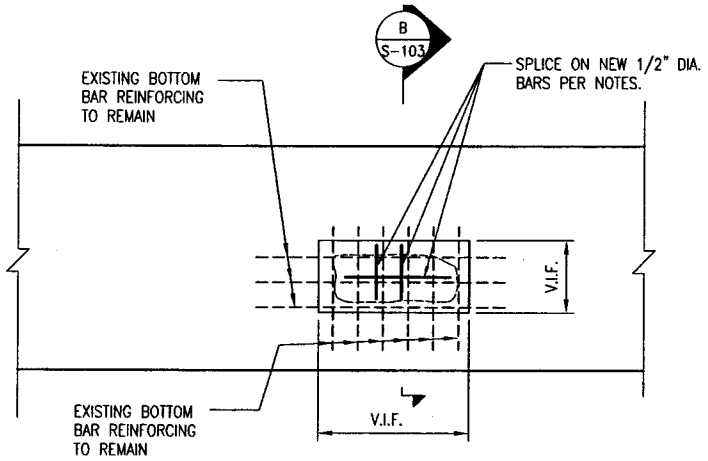
TYPE	DESCRIPTION	LOCATION	MANUFACTURER	PRODUCT	COLOR/FINISH	NOTES
ACT-1	Lay-in ceiling tile	office 110, maproom	Armstrong or equal	Fine Fissured 24"x24"	white	see specifications for other approved manufacturers
ACT-2	Lay-in ceiling tile	Women's locker	Armstrong or equal	Ceramaguard Fine Fissured 24"x48"	white	see specifications for other approved manufacturers
C-1	Existing ceiling/slab to remain, patch as required					
C-2	Existing ceiling/slab, painted, patch as required					
C-3	Spray on fireproofing at bottom of metal deck					
CR-1	Existing concrete floor					
CR-2	Existing concrete floor with epoxy traffic coating		Consolideck®	Saltguard® WB		see specifications for other approved manufacturers
CR-3	New concrete floor with epoxy traffic coating		Consolideck®	Saltguard® WB		see specifications for other approved manufacturers
CT-1	Ceramic Floor Tile		Daltile or equal	Keystones 2x2	Desert Gray Speckle D200	see specifications for other approved manufacturers
CT-2	Ceramic Wall Tile		Daltile or equal	Rittenhouse Square 3x6	Matte Arctic White 0790	see specifications for other approved manufacturers
RF-1	Resilient Flooring		Forbo or equal	13x13 Marmoleum Composite Tile	MCT 621 dove grey	see specifications for other approved manufacturers

E[redacted]NT2: DEP Shaft Maintenance Building
Finish Types

TYPE	DESCRIPTION	LOCATION	MANUFACTURER	PRODUCT	COLOR/FINISH	NOTES
W-1	Existing Masonry, patch and repaint at areas of work		PPG or equal	Pure Performance 9-500 Semi-Gloss	TBD	see specifications for other approved manufacturers
W-2	Existing plaster, patch and repaint at areas of work		PPG or equal	Pure Performance 9-300 Eggshell	TBD	see specifications for other approved manufacturers
W-3	Painted CMU partition		PPG or equal	Pure Performance 9-500 Semi-Gloss	TBD	see specifications for other approved manufacturers
W-4	Painted GWB	Women's locker, maproom	PPG or equal	Pure Performance 9-300 Eggshell	TBD	see specifications for other approved manufacturers
WB-1	Wall Base	office 110, maproom	Forbo or equal	C98	fog	
WB-2	Tile CoveBase	toilet 116, women's locker	Daltile or equal			



TYP. MODERATE CONCRETE SLAB PATCH @ UNDERSIDE



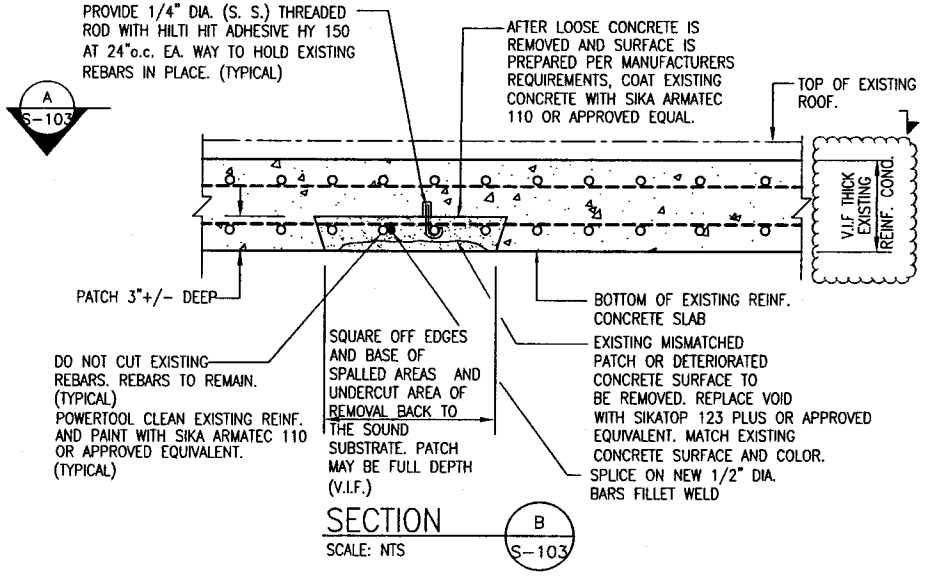
TYP. CONCRETE SLAB PATCH W/ REINF. REPLACEMENT

A
S-103

SCALE: NTS

NOTES:

1. CONTRACTOR SHALL SQUARE OFF AND UNDERCUT EXISTING SPALLED AREA WITH CHIPPING GUN OR JACKHAMMER. DO NOT CUT EXISTING REINFORCING. CLEAN AND REMOVE ALL LOOSE CONCRETE AND EXPOSE REINFORCEMENT.
2. SCRAPE REINFORCEMENT OF ALL RUST TO GREY METAL~ (SPLICE ON NEW 1/2" DIA. BARS IF EXISTING BARS ARE MORE CORRODED THAN 25% LOOSE SECTION). APPLY SIKA ARMATEC 110 AND REPLACE VOID WITH SIKATOP 123 PLUS OR APPROVED EQUAL MATCH EXISTING CONCRETE SURFACE AND COLOR.



SECTION

B
S-103

SCALE: NTS

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF STRUCTURES

ADDENDUM TO THE GENERAL CONDITIONS

The General Conditions are hereby amended in accordance with the terms and conditions set forth in this Addendum.

I. PROJECT DESCRIPTION

FMS #: EP6-KENT2

PROJECT NAME: Rehabilitation and Upgrade of the DEP Shaft Maintenance Building

PROJECT DESCRIPTION:
The Project Is a Code Renovation, Including Masonry Facade Rehabilitation, Cast-Iron Rehabilitation, Improvements To Accessibility, Life Safety, Egress And New Building Systems Including Mechanical And Fire Protection.

PROJECT LOCATION:	**356 Flushing Avenue**
BOROUGH:	**Brooklyn**
CITY OF NEW YORK	
ZIP CODE:	**11256**
COMMUNITY BOARD #:	**3**

PROJECT MANAGEMENT:

[X] DDC shall publicly bid and enter into a single Contract for the Project. DDC shall manage the Project using its own personnel.

[ ] DDC shall publicly bid and enter into a single Contract 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 (September 2008) entitled "The Resident Engineer".

[ ] DDC has entered into CM/Build Contract for the Project. The CM/Build Contractor shall be responsible for conducting a competitive bid process and entering into the contract(s) for the Project.

II. CM / BUILD CONTRACT: REVISIONS TO THE GENERAL CONDITIONS

Not Used.

III. 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.

IV. 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.

V. APPLICABILITY OF ARTICLES AND AMENDED ARTICLES

The Contractor is advised that various Articles in the General Conditions may not apply to this Project or may apply as amended. Such Articles advise the Contractor to "Refer to the Addendum to the General Conditions for the applicability of this Article." Such Articles are set forth below. A check mark indicates whether the Article (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 Article, as set forth in the General Conditions, applies to the Project. Amended Articles, if any, are set forth following this list of Articles.Articles, if any, are set forth following this list of Articles.

Article No.	Article		Sub-Article or PART (if applicable)	Applies		Does not Apply		Applies as Amended
1.04	Contract Drawings	C)	PRINTS			X		
1.05	Shop Drawings and Record Drawings	B)	INTEGRATED DRAWINGS			X		
1.09	Surveys			X				
1.13	Sleeves and Hangers			X				
1.15	Temporary Heat			X				
1.20	Progress Photographs			X				
1.26	Security Guards/Fire Guards on the Site					X		
1.29	Sleeve and Penetration Drawings			X				
1.30	Location of Partitions			X				
1.34	Temporary Services		PART A			X		
			PART B	X				
1.35	Temporary Use, Operation and Maintenance of Elevators during Construction		PART A – For New Buildings Up to 15 Stories			X		
			PART B – For New Buildings Over 15 Stories			X		
			PART C – Existing Buildings			X		

Article No.	Article	Sub-Article or PART (if applicable)		Applies		Does not Apply		Applies as Amended
1.36	General Mechanical Requirements			X				
1.37	General Electrical Requirements		PART B – Section A) Temporary Lighting	X				
			PART B – Section B) Site Security Lighting (New Construction)			X		
			PART D – Electrical Conduit System Including Boxes	X				
			PART E – Electrical Wiring Devices	X				
			PART F – Electrical Conductors and Terminators	X				
			PART G – Circuit Protective Devices	X				
			PART H – Distribution Centers	X				
			PART I – Motors	X				
			PART J – Motor Control Equipment	X				
1.40	Separation Between Trades					X		
1.42	Specific Requirements	C)	BORINGS			X		
		E)	WORK FENCE ENCLOSURE	X				
		G)	RESIDENT ENGINEER'S OFFICE					
			1. OFFICE SPACE IN EXISTING BUILDING			X		
			2. TRAILER OFFICE					X
		H)	ADDITIONAL EQUIPMENT FOR THE RESIDENT ENGINEER					X
		I)	PUBLIC TELEPHONE			X		
		Q)	PROJECT SIGN AND RENDERING					
			PART B– PROJECT RENDERING	X				

COMPUTER WORKSTATIONS

H) Number of Computer Workstations to be provided as outlined in Article 1.42 H, item 4: 2

AMENDED ARTICLES

The Contractor is advised that the amended Articles set forth below are included in the General Conditions and apply to the Project.

Article 1.42 G – 2n.

Delete and replace with the following:

n. The following movable equipment shall be furnished:

1. Two (2) single pedestal desks, 42" x 32 "; two; (2) swivel chair with arms. Two (2) lockers metal olive green or gray, single, 15" x 18" x 78" overall including 6 legs. Lockers to have flat key locks with tow (2) keys each, General Steel products or approved equal. Two (2) full ball bearing suspension for (2) drawer vertical legal filing cabinets with locks approximately 52" H x 21½" D x 18" W in a grey finish by Art Steel No. 2904 or approved equal.

2. Two (2) 30" x 60" folding tables and 12 folding chairs.

3. One (1) 600 B.T.U. and one (1) 9000 B.T.U. air conditioner. Wiring for the air conditioners shall be minimum No. 12 AWG fed from individual circuits in the fuse box.

4. Two (2) metal wastebaskets, olive green or grey finish, 13" inches square 15" inches high with rubber feet and corners by Art Metal Company No. 168 or approved equal.

5. One (1) fire extinguisher one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.

6. One (1) Poland Springs water cooler with bottled water, Model No. LP 14058 or approved equal to be furnished for the duration of the Contract as required.

7. One (1) 2.5 c.f. mini refrigerator self-defrosting Danby or approved equal.

8. One (1) 1 c.f. microwave Magic Chef or approved equal.

Article 1.42 H

4. Delete and replace with the following:

Computer Equipment - Computers shall be provided for all contracts regardless of construction duration.

Computers furnished by the Contractor for use by City Personnel, for the duration of the contract and shall meet the following minimum requirements:

(1) Personal Computer(s) - Workstation Configuration.

(a)	Make and Model:	Dell, HP, Gateway, or an approved equal. (**Note**: an approved equal requires written approval of the Assistant Commissioner of ITS.)
(b)	Processor:	i5-2400 (6mb Cache, 3.1 GHz) or faster computer-Single Processor.
(c)	System RAM:	Minimum of 4 GB (Gigabytes) Dual channel DDR3 SDRAM at 1333MHz-2 DIMMS
(e)	Hard Disk Drive(s):	500 GB (Gigabytes) Serial ATA (7200RPM) w/DataDurst Cashe, or larger.
(f)	CD-RW:	SATA Super Multi DVD Writer Drive or better.
(g)	16xDVD+/-RW	DVD Burner (with double layer write capability) 16x Speed or faster
(h)	I/O Ports:	Must have at least one (1) Serial Port one, (1) Parallel Port, three (3) USB Ports.
(i)	Video Display Card:	HD Graphics (VGA, HDMI) with a minimum 64 MB of RAM.
(j)	Monitor:	22" W, 23.0 Inch VIS, Widescreen, VGA/DVI LCD
(k)	Available Exp. Slots:	System as configured above shall have at least two (2) full size PCI Slots available.
(l)	Other Peripherals:	Optical scroll Mouse, 101 Key Keyboard, Mouse Pad and all necessary cables.
(m)	Software Requirement:	Microsoft Windows 7 Professional 32 bit; Microsoft Office 2010 Professional; Microsoft Project 2010, Adobe Acrobat reader, Anti-Virus software package w/ 2 year updates subscription, and Auto Cad 2012 LT

(2) All field offices requiring computers shall be provided with the following:

(a) One (1) broad-band internet service account. This account will be active for the life of the project.

(b) One (1) 600 DPI HP Laser Jet Printer (twelve (12) pages per minute or faster) with one (1) Extra Paper Tray (Legal Size)

(c) All necessary Cabling

(d) Storage Boxes for and Blank CDs/DVDs

(e) Printer Table

(f) UPS/Surge Suppressor combo

(3) 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 Contractor is responsible for rectifying all computer problems or equipment failures within one (1) business day.

(4) All computers required for use in the Engineer's Field Office shall be delivered, installed, and set up in the Field Office by the Contractor.

(5) An adequate supply of blank CD's/DVD's, and paper and toner cartridges for the printer shall be provided by the Contractor, and shall be replenished by the Contractor as required by the Engineer.

(6) It is the Contractor's responsibility to ensure that electrical service and phone connections are also available at all times.

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 Donna Lynn, Director, ITS-User Support at 718-391-1761.

5. The Contractor shall provide the following photo/video equipment:

   a. One compact digital professional camera shall meet or exceed the following specifications:
      1. 2.5" (115k Pixels TFT LCD Screen)
      2. 0.2" 201K LCD, TTL EVF Viewfinder
      3. 10.0 Megapixel
      4. 31MB Internal Flash Memory, optional Memory Stick
      5. Total zoom 30X; optional zoom 15X

   b. One Digital Flatbed Scanner shall meet or exceed the following specifications:
      1. Resolution – optical: Up to 2400dpi; Enhanced : Up to 999999dpi
      2. control Panel – 5 front panel buttons (copy center, e-mail, file document, scan document, scan photo)
      3. Bit depth – 48 bit
      4. Maximum document size – 8.5 x 14
      5. Automatic document feeder – standard, 50 sheets

   c. Supported operating system – Windows 7 Professional,

VI. ADDITIONAL ARTICLES

The Contractor is advised that the additional Articles set forth below are included in the General Conditions and apply to the Project.

Article 1.06 – Approval of Materials

1.06(A) Mock-Ups

CC. After relevant Sections' samples have been submitted and returned approved, using approved materials, provide mock-ups as indicated on the drawings. Approval by the Commissioner is required prior to commencing any final mock-up work, including foundation walls.

DD. Scope of compliance required for approval:

1. Material unit types, sizes, shapes, color range, texture, surfaces and configuration. Dimensions and warpage limits as specified.
2. Joint size, alignment, color, tooling configuration, and texture. Materials will be evaluated for surface appearance after materials are installed and cleaned as specified.
3. Joint pattern and color pattern.
4. Conformance of workmanship to standard specified in the contract documents.
5. Quality of appearance of approved cleaning material applied by the approved methods proposed for finished work.
6. Quality of appearance of approved sealers and finish coats.
7. Workmanship with respect to material placement and dimensional tolerances.

EE. Use approved mock-up as standard of comparison for all work built of same materials.

FF. Do not destroy or move mock-up until all contract work is completed and accepted by the Commissioner.

Article 1.23 Removal of Rubbish and Surplus Material

C-1. LABORERS – The City has established that as many of the project's waste material as economically feasible shall be reused, salvaged or recycled. Waste disposal in landfills shall be minimized. The Contractor shall be responsible for the development and implementation of a Waste Management Plan. Each individual Contractor shall furnish all necessary information to the General Contractor and cooperate in all respect to coordinate the removal of waste and surplus materials with the Plan. Refer to specification Section 01 74 19 "Construction Waste Management".

C-2. The General Contractor shall be responsible for removal of all waste, surplus materials, and rubbish from the site in accordance with approved Waste Management Plan. The Contractor shall remove from the designated locations all containers of piles of rubbish, debris, waste material, surplus material and wood crating as they accumulate and when directed by the Resident Engineer and remove from site. Arrange for timely pickups from the site or deliveries to recycling facilities in order to prevent deterioration and contamination of recyclable material. The contractor shall employ and keep engaged for this purpose an adequate number of laborers.

Article 1.31 C) Furniture and Equipment

A-1. RESPONSIBILITY – Prior to moving due to interference with proper performance of work, all loose furniture and/or equipment should be identified to Resident Engineer.

B-1. PROTECTION – All such furniture and/or equipment must be adequately protected during working operations.

Article 1.43 INTERFERENCE DRAWINGS - Additional Article

INTERFERENCE DRAWINGS

A. Immediately after the award of the Contract, the HVAC Contractor shall begin preparation of Interface Drawings.

1. These Interference Drawings shall be prepared using a computer drafting program able to export files in .DXF format. The preferred program is AutoCAD 2008.
2. All submissions of the Interface Drawings shall be made through the HVAC Contractor in accordance with the requirements as specified herein for shop drawings.

B. Preparation Requirements

1. The GC and HVAC Contractor should schedule an Interference Drawing preparation kick-off meeting with the Plumbing, and Electrical Contractors. This meeting should be held approximately two (2) weeks after the Notice to Proceed The preparation of Interference Drawings shall be started by the HVAC Contractor and shall show the layout and shop fabrication of the sheet metal work and sprinkler work. The Interference Drawings shall be formatted so they are printed on 24" x 36" sheets and they shall include complete plans and sections as required to fully illustrate in accurate dimension and location all items of duct work, access panels, associated fans, air handling units, coils, filters and dampers, appliances, sprinkler mains, sprinkler branch lines, sprinkler heads, and other equipment that are provided under his Contract. The Interference Drawings shall be dimensioned and should also include—in accurate dimension, size, and location—all structural framing, lighting fixtures, equipment, and any other items that may cause an interference. After 30 calendar days, all interferences in connection with his work shall have been worked out by the HVAC Contractor and he shall submit copies of his Interference Drawings to the Commissioner for review and approval. After final approval, the HVAC Contractor shall submit reproducible copies of his Interference Drawings to the Plumbing Contractor.
2. The Plumbing Contractor shall then prepare his Interference Drawings showing all wastes, vents, water piping, equipment, and other items being provided under his Contract. The piping must be so arranged and positioned so as not to interfere with any of the layouts for HVAC work. The piping must be run and fit into the available excess spaces and areas. Any interferences discovered shall be resolved by conference with the HVAC Contractor and adjustments to their work made by one or both subcontractors as may be necessary. Particular attention shall be directed to the location of crossovers to be sure that all mechanical work will fit into the ceilings, furred areas, or mechanical spaces as provided by the Contract Drawings. After 15 calendar days, the Plumbing Contractor shall submit copies of his Interference Drawings to the Commissioner for review and approval. After final approval, the Plumbing Contractor shall submit reproducible copies of his Interference Drawings to the HVAC Contractor.
3. The HVAC Contractor shall then prepare his Interference Drawings showing all HVAC piping work and related items being provided under his Contract. The HVAC piping must be so arranged and positioned so as not to interfere with any of the layouts for the HVAC duct work or the plumbing work. The HVAC piping must be run and fit into the available excess spaces and areas. Any interferences discovered shall be resolved by conference with the Plumbing Contractor and the HVAC Contractor for the duct work, and adjustments to their work made by one or both Contractors as may be necessary. After 15 calendar days, the HVAC Contractor shall submit copies of his Interference Drawings to the Commissioner for review and approval. After final approval, the HVAC Contractor shall submit reproducible copies off his Interference Drawings for HVAC piping and duct work to the Electrical Contractor.
4. The Electrical Contractor shall then prepare his Interference Drawings showing all conduit runs, pull boxes, panel boards, and equipment for all work on the various systems being provided under his Contract. Any interferences with the work of this Contractor shall be resolved by conference between the other Contractors involved and adjustments to their work may be made by one or more Contractors as may be necessary. After 15 calendar days, the Electrical Contractor shall submit copies of his Interference Drawings to the Commissioner for review and approval. After final approval, the Interference Drawings shall be distributed as specified herein below.

C. General Requirements

1. It is the responsibility of each Contractor to show all items of his work in accurate dimension, size, and location. Any interferences in the work of the Contractor caused by the lack of this information will be corrected by him without any costs to the Owner.
2. Any Contractor failing to promptly review and incorporate his work on the Interference Drawings shall assume full responsibility for the resolution of any installation conflicts affecting his work.
3. The preparation and distribution of the Interference Drawings shall be completed within the time period established at the Pre-Construction Meeting.
4. All work in the field shall be performed in accordance with the final approved Interference Drawings.

D. Distribution

1. After all interference drawings have been reviewed and approved by the Architect, the HVAC Contractor, at his own expense, shall have 24" x36" black or blue line prints made and distributed in the quantities as follows:

DDC Construction Manager:	Two (2) copies
General Contractor (Architectural + Structural)	Two (2) copies
Trade Contractor (Plumbing):	Two (2) copies
Trade Contractor (HVAC + Fire Protection):	Two (2) copies
Trade Contractor (Electric):	Two (2) copies
Commissioner:	Two (2) copies
Mechanical Engineer:	Two (2) copies

2. If any deviations are made from the approved Interference Drawings occur during construction, the respective Contractor will mark-up their Drawing set in the field to identify said deviations.
3. To convey the as-built conditions, the Contractors will update the Interference Drawing files in the computer drafting program to include any deviations from the approved Interference Drawing set.
4. After completion of the project, the Contractor shall obtain and turn over to the City of New York for record:
    a. Four (4) Compact Disks (CDs) containing the digital files of the final approved Interference Drawing. These digital files must reflect any deviations made during construction (as-built conditions). The cost of the reproducibles shall be paid for by the Contractor providing them.
    b. Four (4) copies of 24" x 36" black or blue line prints of the Interference Drawings (as-built drawings).

Article 1.44 The Contract Documents for this Project (Drawings and Specifications) were originally prepared to include Alternate Bids. To correct this situation, the Contractor is advised that the Contract Documents are revised as set forth below:

(a) Delete any and all references to Alternate work. The Contract Price shall include all work shown on all documents including all work described as Alternate work.

VII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

(1) **GENERAL**: The following are set forth below: (a) Special Experience Requirements applicable to the contractor or subcontractor that will perform specific areas of work, and (b) Special Experience Requirements applicable to the manufacturer that will provide specific material or equipment.

(2) **REVISION OF SPECIFICATIONS AND DRAWINGS**: In the event the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth below, such Special Experience Requirement is deemed deleted, except as otherwise expressly provided in Section VIII of this Addendum.

(3) **SPECIAL EXPERIENCE REQUIREMENTS FOR SPECIFIC AREAS OF WORK**: The special experience requirements set forth below apply to the contractor or subcontractor that will perform specific areas of work. Compliance with such experience requirements will be evaluated after an award of contract. Within two (2) weeks of such award, the contractor will be required to submit the qualifications of the contractor or subcontractor that will perform these specific areas of work. If the contractor intends to perform these specific areas of work with its own forces, it must demonstrate compliance with the special experience requirements. If the contractor intends to subcontract these specific areas of work, the proposed subcontractor(s) must demonstrate compliance with the special experience requirements. Once approved, no substitution will be permitted, unless the qualifications of the proposed replacement have been approved in writing in advance by the City.

(a) Special Experience Requirement #1: The contractor or subcontractor performing the work of this section must, within 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. This Special Experience Requirement applies to the contractor or subcontractor that will perform specific areas of work specified in the sections set forth below.

General Construction:

- Section 02 41 00: Demolition
- Section 04 01 00: Masonry Restoration and Cleaning
- Section 05 12 00: Structural Steel
- Section 05 50 00: Metal Fabrications – Miscellaneous Ornamental Metals
- Section 05 74 11: Cast Iron Restoration

(b) Special Experience Requirement #2: The contractor or subcontractor performing the work of this section must, within 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. The contractor or subcontractor performing the work of this section must be licensed or approved by the manufacturer of the roofing system This Special Experience Requirement applies to the contractor or subcontractor that will perform specific areas of work specified in the sections set forth below.

General Construction:

- Section 07 53 00: Membrane Roofing (EPDM)

(4) **SPECIAL EXPERIENCE REQUIREMENTS FOR MANUFACTURERS**: The special experience requirements set forth below apply to the manufacturer that will supply or fabricate specific material or equipment. Compliance with such experience requirements will be evaluated after an award of contract. Within two (2) weeks of award, the contractor will be required to submit the qualifications of the proposed manufacturer(s). Once approved, no substitution will be permitted, unless the qualifications of the proposed replacement have been approved in writing in advance by the City

(a) Special Experience Requirement #3: The manufacturer providing the material or equipment specified in this section must, for the past five (5) years, have been regularly engaged in the manufacture of material or equipment similar in type to that required for this Project. Such similar material or equipment provided

by the manufacturer must have been in satisfactory service for not less than five (5) years. This Special Experience Requirement applies to the manufacturer that will provide material or equipment specified in the section(s) set forth below.

General Construction:

- Section 05 12 00: Structural Steel
- Section 05 74 11: Cast Iron Restoration
- Section 05 50 00: Metal Fabrications – Miscellaneous Ornamental Metals
- Section 14 42 00: Wheelchair Lift

VIII. 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 the contract.

REFERENCE	ITEM	REQUIREMENTS	CONTRACT FOR GENERAL CONSTRUCTION	
Article 14 Contract	Time of Completion	Consecutive Calendar Days	**890 ccds**	
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	**$ 600.00**	
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	Maintenance & Guaranty	Percent of Contract Price	**1%**	
Article 77 Contract	MWBE Program		See Subcontractor Utilization Plan in the Bid Booklet	

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART I. 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
■ Commercial General Liability Art. 22.1.1	$ 1,000,000 per occurrence $ 2,000,000 aggregate (applicable separately to this **Project**) Additional Insureds: 1. City of New York, including its officials and employees
■ Workers' Compensation Art. 22.1.2 ■ Disability Benefits Insurance Art. 22.1.2 ■ Employers' Liability Art. 22.1.3 □ Jones Act Art. 22.1.4 □ U.S. Longshoremen's and Harbor Workers Compensation Act Art. 22.1.4	Workers' Compensation: Statutory per New York State law without regard to jurisdiction Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction Employers' Liability: $1,000,000 each accident
■ Builders' Risk Art 22.1.5 □ Installation Floater	Applicable to Builders' Risk or Installation Floater: ___100___ % of total value of **Work** City of New York and the **Contractor** named as Loss Payee for the **Work** in order of precedence, as their interests may appear. Note: Article 22.1.5 is revised by deleting the following sentence: "Such policy shall name as insureds the City, the Contractor, and its Subcontractors". This deletion applies to Builders' Risk and Installation Floater.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART I. 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
■ Comprehensive Business Auto Coverage Art. 22.1.6	$ 1,000,000 per accident If vehicles are used for transporting hazardous materials, the **Contractor** shall provide pollution liability broadened coverage for covered autos (endorsement CA 99 48) as well as proof of MCS 90 Additional Insured: 1. City of New York, including its officials and employees
□ Pollution/Environmental Liability Art. 22.1.7	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
□ Marine Protection and Indemnity Art. 22.1.8(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 I. 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.

☐ Ship Repairers Legal Liability Art. 22.1.8(b)	$_____ each occurrence [Contracting agency to fill in total value of City vessels involved]
☐ Collision Liability/Towers Liability Art. 22.1.8(c)	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
☐ Marine Pollution Liability Art. 22.1.8(d)	$_____ each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.9 ☐ 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 I. 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.

[OTHER] ■ Asbestos Liability	Art. 22.1.9	$1,000,000 each occurrence, $2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal. Additional Insureds: 1. City of New York, including its officials and employees, and 2. 122 Community Center
[OTHER] ■ Boiler Insurance	Art. 22.1.9	$200,000
[OTHER] ■ Professional Liability 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.	Art. 22.1.9	$1,000,000 per occurrence $3,000,000 aggregate

SCHEDULE B

Guarantees and Warranties

(Reference: Article 1.22 of the 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 53 00	Membrane Roofing (EPDM)	15 years
07 60 00	Flashing and Sheet Metal	2 years
	Color Coating	20 years
07 61 10	Sheet Metal Roofing	15 years
	Color Coating	20 years
07 90 00	Caulking and Sealing/Joint Sealants	2 years
08 33 00	Coiling Doors and Grilles	2 years
08 56 30	Storm Windows	5 years
08 63 00	Skylight Glazing Panels	10 years
08 80 00	Glass and Glazing	Glass/Glazing - 10 years Mirrors - 5 years
09 51 00	Acoustical Panels and Grid	10 years
10 21 00	Toilet Compartments	10 years
14 42 00	Wheelchair Lift Drive Train	2 years

21 13 00	Sprinkler booster pump and jockey pump	1 year from start up
22 11 00	Domestic Water Pumps	1 year from start up Not to exceed 18 months from date of shipping
22 11 00	Electrical Domestic Water Heaters	3 years tank, 1 year other parts
22 13 00	Sump Pumps	1 year from start up
22 13 00	Sewage Ejectors	1 year from start up
23 05 13	Variable Frequency Drives	2 years
23 09 00	CO Monitor Sensors	1 year
23 09 00	Direct Digital Controls	1 year
23 64 50	Condensate Pumps	1 year
23 64 50	Centrifugal HVAC Fans	1 years
23 64 50	Gas Fired Heating and Ventilating Make Up Air Units	4 years on Burner Section Other Parts - 1 year
23 64 50	Electric Cabinet Heaters	1 year
23 64 50	Packaged, Computer Room, Heating and Cooling Units	Compressor - 5 years Others - 1 year
28 31 11	Fire-Alarm System	1 year

(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.

SCHEDULE C

Contract Drawings

(Reference: Article 1.04(A) of the General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

TITLE DRAWINGS

1	T-000.00	COVER SHEET
2	T-001.00	DRAWING LIST
3	T-002.00	GENERAL NOTES & ADA DIAGRAMS
4	X-001.00	SITE SURVEY
5	BPP-001.00	BUILDERS PAVEMENT PLAN

DEMOLITION DRAWINGS

6	DM-100.00	CELLAR DEMOLITION PLAN
7	DM-110.00	FIRST FLOOR DEMOLITION PLAN
8	DM-120.00	SECOND FLOOR DEMOLITION PLAN
9	DM-130.00	THIRD FLOOR DEMOLITION PLAN
10	DM-135.00	THIRD FLOOR MEZZ. DEMOLITION PLAN
11	DM-140.00	ROOF DEMOLITION PLAN
12	DM-300.00	NORTH ELEVATION DEMOLITION
13	DM-301.00	WEST ELEVATION DEMOLITION
14	DM-302.00	SOUTH ELEVATION DEMOLITION
15	DM-303.00	EAST ELEVATION DEMOLITION
16	DM-304.00	COURTYARD ELEV. DEMOLITION
17	DM-305.00	COURTYARD ELEV. DEMOLITION
18	DM-400.00	MISC. DEMOLITION

ARCHITECTURAL DRAWINGS

19	A-001.00	WALL TYPES
20	A-002.00	DOOR DETAILS
21	A-003.00	SCHEDULES
22	A-004.00	DOOR TYPES
23	A-010.00	INTERIOR PHASING PLAN
24	A-050.00	SITE PLAN
25	A-100.00	CELLAR EGRESS
26	A-110.00	FIRST FLOOR EGRESS
27	A-120.00	SECOND FLOOR EGRESS
28	A-130.00	THIRD FLOOR EGRESS
29	A-200.00	CELLAR FLOOR PLAN
30	A-201.00	ENLARGED PLAN: CELLAR
31	A-210.00	FIRST FLOOR PLAN
32	A-211.00	ENLARGED PLAN: FIRST FLOOR
33	A-220.00	SECOND FLOOR PLAN
34	A-221.00	ENLARGED PLAN: SECOND FLOOR
35	A-230.00	THIRD FLOOR PLAN
36	A-231.00	ENLARGED PLAN: THIRD FLOOR
37	A-240.00	ROOF PLAN
38	A-300.00	NORTH EXTERIOR ELEVATION
39	A-301.00	WEST EXTERIOR ELEVATION
40	A-302.00	SOUTH EXTERIOR ELEVATION
41	A-303.00	EAST EXTERIOR ELEVATION
42	A-304.00	COURTYARD EXTERIOR ELEVATION
43	A-305.00	COURTYARD EXTERIOR ELEVATION
44	A-350.00	BUILDING SECTION
45	A-351.00	BUILDING SECTION

46	A-500.00	INTERIOR ELEVATIONS
47	A-501.00	INTERIOR ELEVATION
48	A-600.00	CELLAR REFLECTED CEILING PLAN
49	A-601.00	ENLARGED RCP: CELLAR
50	A-610.00	FIRST FLOOR REFLECTED CEILING PLAN
51	A-611.00	ENLARGED RCP: FIRST FLOOR
52	A-620.00	SECOND FLOOR REFLECTED CEILING PLAN
53	A-621.00	ENLARGED RCP: SECOND FLOOR
54	A-630.00	THIRD FLOOR REFLECTED CEILING PLAN
55	A-700.00	STAIR DETAILS
56	A-701.00	STAIR DETAILS
57	A-702.00	STAIR DETAILS
58	A-710.00	EGRESS STAIR DETAILS
59	A-720.00	VEHICULAR RAMP DETAILS
60	A-850.00	EXTERIOR DETAILS
61	A-851.00	EXTERIOR DETAILS
62	A-852.00	EXTERIOR DETAILS
63	A-853.00	EXTERIOR DETAILS
64	A-854.00	EXTERIOR DETAILS
65	A-855.00	EXTERIOR DETAILS: SKYLIGHT
66	A-856.00	EXTERIOR DETAILS: SIGNAGE
67	A-857.00	EXTERIOR DETAILS: DECORATIVE FRAMING
68	A-900.00	INTERIOR DETAILS
69	A-901.00	INTERIOR DETAILS
70	A-902.00	INTERIOR DETAILS

STRUCTURAL DRAWINGS

71	S-000.00	GENERAL NOTES
72	S-100.00	TYPICAL DETAILS
73	S-101.00	TYPICAL DETAILS
74	S-102.00	TYPICAL DETAILS
75	S-103.00	TYPICAL DETAILS
76	FO-000.00	CELLAR FRAMING PLAN
77	S-210.00	FIRST FLOOR FRAMING PLAN
78	S-220.00	SECOND FLOOR FRAMING PLAN
79	S-230.00	THIRD FLOOR FRAMING PLAN
80	S-240.00	ROOF FRAMING PLAN
81	S-300.00	NORTH EXTERIOR ELEVATION
82	S-301.00	WEST EXTERIOR ELEVATION
83	S-302.00	SOUTH EXTERIOR ELEVATION
84	S-303.00	EAST EXTERIOR ELEVATION
85	S-400.00	DETAILS
86	S-600.00	CELLAR RCP

MECHANICAL DRAWINGS

87	EN-110.00	MECHANICAL ENERGY CODE COMPLIANCE
88	M-001.00	HVAC DRAWING LIST, SYMBOL LIST
89	M-110.00	EQUIPMENT SCHEDULES
90	M-200.00	CELLAR HVAC PLAN
91	M-210.00	FIRST FLOOR HVAC PLAN
92	M-220.00	SECOND FLOOR HVAC PLAN
93	M-230.00	THIRD FLOOR HVAC PLAN
94	M-240.00	ROOF HVAC PLAN
95	M-310.00	HVAC DETAILS SHEET #1
96	M-320.00	HVAC DETAILS SHEET #2

PLUMBING DRAWINGS

97	P-001.00	PLUMBING SITE PLAN, SYMBOL LIST & NOTES
98	P-002.00	CELLAR PLUMBING, DEMOLITION AND TEMPORARY RELOCATION PLAN
99	P-003.00	FIRST FLOOR PLUMBING DEMOLITION AND TEMPORARY RELOCATION PLAN

100	P-100.00	CELLAR PLUMBING PLAN
101	P-110.00	FIRST FLOOR PLUMBING PLAN
102	P-120.00	SECOND FLOOR PLUMBING PLAN
103	P-130.00	THIRD FLOOR PLUMBING PLAN
104	P-200.00	PLUMBING RISER DIAGRAM
105	P-300.00	PLUMBING DETAILS SHEET 1
106	P-301.00	PLUMBING DETAILS SHEET 2
107	P-400.00	PLUMBING PART PLANS & DETAILS
FIRE PROTECTION DRAWINGS		
108	SP-001.00	SPRINKLER SITE PLAN, SYMBOL LIST & NOTES
109	SP-100.00	CELLAR SPRINKLER PLAN
110	SP-110.00	FIRST FLOOR SPRINKLER PLAN
111	SP-120.00	SECOND FLOOR SPRINKLER PLAN
112	SP-130.00	THIRD FLOOR SPRINKLER PLAN
113	SP-200.00	SPRINKLER RISER DIAGRAM
114	SP-300.00	SPRINKLER DETAILS SHEET 1
115	SP-301.00	SPRINKLER DETAILS SHEET 2
ELECTRICAL DRAWINGS		
116	E-001.00	ELECTRICAL SYMBOL LIST AND ABBREVIATIONS
117	E-100.00	CELLAR POWER PLAN
118	E-110.00	FIRST FLOOR POWER PLAN
119	E-120.00	SECOND FLOOR POWER PLAN
120	E-130.00	THIRD FLOOR POWER PLAN
121	E-140.00	ROOF HVAC PLAN
122	E-150.00	PART PLAN CELLAR
123	E-200.00	CELLAR LIGHTING PLAN
124	E-210.00	FIRST FLOOR LIGHTING PLAN
125	E-220.00	SECOND FLOOR LIGHTING PLAN
126	E-230.00	THIRD FLOOR LIGHTING PLAN
127	E-300.00	ELECTRICAL SINGLE LINE RISER DIAGRAM
128	E-400.00	ELECTRICAL PANEL SCHEDULE
FIRE ALARM DRAWINGS		
129	FA-100.00	CELLAR SPRINKLER AND SMOKE DETECTOR PLAN
130	FA-110.00	FIRST FLOOR FIRE ALARM PLAN
131	FA-120.00	SECOND FLOOR FIRE ALARM PLAN
132	FA-130.00	THIRD FLOOR FIRE ALARM PLAN
133	FA-200.00	FIRE ALARM RISER DIAGRAM, NOTS AND SEQUENCE OF OPERATION

SCHEDULE D

Electrical Motor Control Equipment

(Reference: Article 1.37, Part K of the 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.

Legend for Control Type

DB Disconnect Circuit Breaker (Switch)
TS Thermal Switch
MS Magnetic Starter
CMS Comb. Mag. Starter
P Pilot Light
F Firestat
T Thermostat
AL Alternator
BG Break Glass Station
HOA Hand-Off Auto.
PB Push Button Station
RO Remote "off"

Equip. Identification	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
AC-1 and AC-2	Map Room 2nd Floor	2	MCA 80	208/3PH	T	
MAU-1 and MAU-2	Garage Cellar	2	15 HP	208/3PH	VFD/HOA	
MAU-3	Garage 1st Floor	1	15 HP	208/3PH	VFD/HOA	
TX-1	High Roof	1	½ HP	208/3PH	CMS	
EX-1	High Roof	1	15 HP	208/3 PH	VFD	
EX-2	High Roof	1	7.5 HP	208/3 PH	VFD	
UH-A	Stair "A" Stair "B"	3 3	4.8 4.8	208/3 PH	T	
UH-B	Stair "C"	3	6.	208/1 PH	T	
Domestic Water Booster Pumps	Cellar Mechanical Room	2	7.5 HP	208/3PH	VFD, AL	
Sprinkler Booster Pump	Cellar Mechanical Room	1	60 HP	200/3PH	Pressure Switch	
Jockey Pump	Cellar Mechanical Room	1	1.5 HP	208/3PH	Pressure Switch	

SCHEDULE E

Separation of Trades

NO TEXT

SCHEDULE F

Shop Drawing and Material Samples Schedule

(Reference: Article 1.41 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.

REPORT DATE		FMS ID #/PROJECT ID #: CONTRACT REGISTRATION #: PROJECT NAME:							TRADE: SHOP DRAWING LOG SHEET #								USE SEPARATE SHEET FOR EACH TRADE
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 54 23	Scaffolding/Staging		X														
01 57 19	Environmental Protection During Construction				X												
01 73 29	Cutting and Patching			X													
01 74 19	Waste Management Plan		X														
01 74 19	Waste Reduction Progress Reports		X														
01 74 19	Waste Reduction Calculations		X														
	Project Record Documents		X														
	Health and Safety Plan		X														
	Hazard Communication Program		X														
	Job Hazard Analysis		X														
	Work Area Signage		X														

	Lead Exposure Compliance Program		X													
	Personal Protective Equipment Program		X													
	Chemical Strippers (including MSDS)				X											
	Hazardous Waste Management Plan		X													
	Project Certificates		X													

02 41 00	Contractors Qualification Data		X													
02 41 00	Schedule of Demolition Operations		X													
02 41 00	Notice of Differing Conditions		X													
02 41 00	Temporary Dustproof and Weatherproof Partitions		X													
02 41 00	Temporary Shoring, Bracing, Framing, or Support		X													

02 82 13	Scope of Work, Work Plan, and Schedule		X													
02 82 13	Notifications to Government Agencies		X													
02 82 13	Copies of Permits, Clearances, and Licenses		X													
02 82 13	Schedules		X													
02 82 13	Work Site and Decontamination Chamber		X													
02 82 13	Description of Protective Clothing and Approved Respirator to be Used		X													
02 82 13	Delineation of Responsibility		X													
02 82 13	Decontamination Sequence		X													
02 82 13	Description of Equipment to be Utilized		X													

02 82 13	Description of additional Methods, Procedures, Techniques, or Equipment		X														
02 82 13	Explanation of the Handling of Contaminated Waste (including EPA and NYCDEP ID numbers of Waste Hauler		X														
02 82 13	Name of Testing Agency including AIHA Accreditation, and proof of NIOSH PAT and NIST/NVLAP Proficiency		X														
02 82 13	Written Description of Emergency Procedures in case of Injury or Fire		X														
02 82 13	MSDS for Encapsulates, Sealants, and any and all potentially hazardous materials that may be used				X												
02 82 13	Worker List and Training Certificates		X														
02 82 13	Logs (Daily Progress, Visitors, and Disposal)		X														
02 82 13	Workers Acknowledgement		X														
02 82 13	Security and Safety Logs		X														
02 82 13	Progress Logs		X														
02 82 13	Floor Plans showing Progress		X														
02 82 13	Air Monitoring and Inspection Results		X														
02 82 13	Lien Waivers		X														
02 82 13	Daily OSHA Air Monitoring Results		X														
02 82 13	Waste Manifests		X														
02 82 13	Filed Sign-In/Sign-Out Logs		X														
02 82 13	Copies of all DOB Forms and Permits		X														
02 82 13	Letter of Compliance		X														
02 82 13	Warranties		X														
02 82 13	Disposal Certificates and Transport Manifests		X														

03 30 00	Product Data				X												
03 30 00	Concrete Mix Design		X														
03 30 00	Steel Reinforcement		X														
03 30 00	Concrete Placement Schedule		X														
03 30 00	Concrete Structure Plans and Elevations		X														
03 30 00	Formwork		X														
03 30 00	Shoring and Reshoring		X														
03 30 00	Welding Certificates		X														
03 30 00	Welding Procedures		X														
03 30 00	Welding Procedures for Reinforcement Welding		X														
03 30 00	Mill Test Reports		X														
03 30 00	Qualification Data		X														
03 30 00	Material Test Reports		X														
03 30 00	Product Test Reports and Certificates		X														
03 30 00	Description of System to Meet Floor Flatness Tolerances		X														
03 30 00	Field Quality-Control Test and Inspection Reports		X														
03 30 00	Affidavit Indentifying Cementitious Material Used		X														
03 30 00	Transit-Mix Delivery Slips		X														
03 30 00	Minutes of Preinstallation Conference		X														

03 41 13	Product Data				X												
03 41 13	Qualification Data		X														
03 41 13	Material Test Reports		X														

03 41 13	Product Test Reports and Certificates		X														
03 41 13	Field Quality-Control Test and Inspection Reports		X														

04 01 00	Masonry Materials		X	X	X												
04 01 00	Accessory Materials		X	X	X												
04 01 00	Product Test Reports and Certificates		X														
04 01 00	Field Quality-Control Test and Inspection Reports		X														
04 01 00	Cleaning Materials and Techniques		X	X													

04 05 03	Mix Designs		X	X	X												
04 05 03	Product Test Reports and Certificates		X														

04 20 00	Masonry Materials		X	X	X												
04 20 00	Accessory Materials		X	X	X												
04 20 00	Product Test Reports and Certificates		X														
04 20 00	Field Quality-Control Test and Inspection Reports		X														
04 20 00	Reinforced Masonry Grout and Reinforcing		X	X													

04 40 00	Stone Materials		X	X	X												
04 40 00	Accessory Materials		X	X	X												
04 40 00	Product Test Reports and Certificates		X														
04 40 00	Field Quality-Control Test and Inspection Reports		X														

05 12 00	Product Data				X												

05 12 00	Architectural Structural Steel - preparation and shop coating		X		X												
05 12 00	Fabrication of Structural Steel Components		X														
05 12 00	Connection Design		X														
05 12 00	Erection Procedure		X														
05 12 00	WPSs and PQRs		X														
05 12 00	Weld Shrinkage and Distortion Procedures		X														
05 12 00	Fastener Installation Procedures		X														
05 12 00	Qualification Data		X														
05 12 00	Welding Certificates		X														
05 12 00	Mill Test Reports		X														
05 12 00	Contractor Certificate of Compliance for Materials		X														
05 12 00	Product Test Reports and Certificates		X														
05 12 00	Source Quality-Control Reports		X														
05 12 00	Identification Mark System to Testing Agency		X														

05 30 00	Product Data				X												
05 30 00	Decking Plans, and Details including Shear Stud Layout		X														
05 30 00	Product Certificates		X														
05 30 00	Welding Procedure Specifications		X														
05 30 00	Welding Certificates		X														
05 30 00	Field Quality-Control Test and Inspection Reports		X														
05 30 00	Product Test Reports		X														

05 30 00	Research and Evaluation Reports		X														

05 40 00	Metal Framing				X												
05 40 00	Engineering Data Drawings		X														
05 40 00	Installer Qualifications		X														
05 40 00	Structural Design Calculation		X														
05 40 00	Installer Certificates		X														
05 40 00	Installation Instructions		X														

05 50 00	Contractors Qualification Data		X														
05 50 00	Stair Rails and Infill		X														
05 50 00	Caged Ladder		X	X													
05 50 00	Stair Treads		X	X													
05 50 00	Door Frames		X	X													
05 50 00	Entry Court Stair/Railings		X	X													
05 50 00	Trench Grating/Frame		X	X													
05 50 00	Bollards		X	X													
05 50 00	Miscellaneous		X	X													

05 74 11	Contractors Qualification Data		X														
05 74 11	Cast Iron Material				X												
05 74 11	Drawings		X														
05 74 11	Installer Qualifications		X														

05 74 11	Installer Certificates		X														
05 74 11	Installation Instructions		X														

06 00 00	Pressure Treatment Certification			x	x												
06 00 00	Fire Retardant Certification			X	X												
06 00 00	Floor Structure		X	X													
06 00 00	Material Submittals and Product Certifications			X	X												
06 00 00	Hardware for all Millwork			X	X												

07 22 00	Material Submittals and Product Certifications			X	X												

07 53 00	Contractors Qualification Data		X														
	Manufacturers Qualification Data		X														
	Manufacturer's Specifications, Surface Prep and Application Instructions, Recommendations, and Protection and Cleaning Instructions		x		x												
	Manufacturer Certificates		X														
	Applicator Certificates		X														
	Warranty		X														

07 60 00	Contractors Qualification Data		X														
	Shop Drawings		x														

	Flashing Samples			X													

07 61 10	Contractors Qualification Data		X														
	Shop Drawings		x														
	Material Samples			X													

07 81 00	Spray-Applied Fireproofing		X		X												
	Product Certificates		X														
	Installer Certificates		X														
	Product Test Reports		X														
	Research / Evaluation Reports		X														
	Intumescent Paint Product Data				X												
	Samples			X													
	Shop Drawings		X														
	Quality Assurance		X														

07 84 00	Firestops Product Data		X		X												
	Shop Drawings		X														
	MSDS				X												
	Installer Qualifications		X														

07 90 00	LEED Documentation		x		X												
	Joint Sealers Product Data		X		X												
	Manufacturer's Certification				X												

	Shop Drawings		X														
	Samples			X													
	Testing Results		X														

08 11 00	Metal Doors and Frames		X		X												
	Door Schedule		X														

08 31 00	Access Doors and Frames		X		X												
	Access Doors and Panels Schedule		X														

08 33 30	Contractor Qualification Data		X														
	Manufacturers Qualification Data		X														
	Shop Drawings		x														
	Structural Analysis		X														
	Factory Finishes			X													

08 51 10	Contractor Qualification Data		X														
	Manufacturers Qualification Data		X														
	Window Systems, Calculations and product data		X														
	Shop Drawings		X														
	Samples			X													

08 56 30	Contractor Qualification Data		X														
	Manufacturers Qualification Data		X														

	Shop Drawings		X														
	Samples			X													

08 63 00	Contractor Qualification Data		X														
	Manufacturers Qualification Data		X														
	Skylight Systems, Calculations and product data		X														
	Shop Drawings		X														
	Samples			X													

08 80 00	Glass and Glazing				X												
	Selection Samples			X													
	Verification Samples			X													
	Wind Load Calculations		X														
	Test Reports		X														

08 90 00	Louver and Vents		X		X												

09 24 00	Contractor Qualification Data		X														
	Lathing and Plastering Materials List		X	X	X												
	Shop Drawings		X														
	Mock Up			X													

09 29 00	Shop Drawings		X	X	X												
	Samples			X													

	Manufacturers Technical and Installation Data				X												
	Gypsum Drywall Test Reports		X		X												

093000	Ceramic Tile Sample Panels			X													
	Marble Saddle Sample			X													
	Waterproofing Membrane Sample			X													
	Master Grade Certificates		X														
	Mock Ups		X	X													

09 51 00	Acoustical Ceilings Product Data		X		X												
	Shop Drawings		X														
	Samples			X													

09 65 00	Flooring			X	X												
	Base			X	X												
	Maintenance Instructions				X												

09 67 00	Flooring			X	X												
	Maintenance Instructions				X												

09 90 00	Material Certifications			x	x												
	Samples			x	x												

10 21 00	Toilet Partition Shop Drawings		X													
	Toilet Partition Samples			X												
	Toilet Partition Templates				X											
10 22 13	Wire Mesh Product Data		X		X											
	Shop Drawings		X													
	Samples			X												
10 28 00	Toilet Accessories		X		X											
	Schedule of Toilet Accessories		X													
10 51 00	Locker Shop Drawings		X													
	Color Samples			X												
10 90 00	Shop Drawings		X													
	Color Samples			X												
14 42 00	Lift Product Data		X	X	X											
	Operation and Maintenance Data				X											
21 12 00	Fire-Suppression Standpipe System		X		X											
21 13 00	Fire-Suppression Sprinkler Systems		X	X	X											

22 05 00	Common Work Results for Plumbing		X	X													
22 05 13	Electric Motors and Motor Controllers		X		X												
22 05 23	General Duty Valves for Plumbing Piping		X		X												
22 05 29	Hangers and Supports		X		X												
22 05 53	ID and Painting		X	X	x												
22 05 77	Plumbing System Tests		X														
22 07 00	Plumbing Insulation		X		X												
22 10 00	Pipe, Tube and Fittings		X	X	X												
22 11 00	Facility Water Distribution		X		X												
22 13 00	Facility Sanitary Sewerage		X		X												
22 30 00	Plumbing Equipment Specialties and Accessories		X		X												
22 40 00	Plumbing Fixtures		X	X	X												
22 10 00	Facility Fuel System		X		X												

23 05 00	Common Work Results for HVAC		X														
23 05 13	Common Motor Requirements for HVAC Equipment		X														
230548	Spring Isolators				X												
230548	Roof Curbs		X														
230548	Pipe Support				X												
230593	Balancing Reports		X														
230700	Piping and Ductwork Insulation			1	X												
230900	Direct Digital Control System		X														
230900	CO Monitor and Sensors		X														

230900	Multiblade Dampers and Controls				X												
230900	Time Clocks				X												
230900	Automatic Valves				X												
230900	Electrical Actuators				X												
230900	Programmable and Line Voltage Thermostats				X												
232113	Piping Lay-Outs		X														
232113	Report of Pipe Field Hydrostatic Test		X														
232113	Piping and Fitting Material		X														
232113	Valves				X												
232113	Escutcheons			1	X												
233113	Duct Work Shop Drawings 2		X														
233113	Report-Field Testing of Air Outlets Flow		X														
233113	Ductwork and Accessories		X	1													
233117	Acoustical Duct Linings		X														
233117	Certified Test Data for Sound		X														
233713	Air Outlets		X	1													
236450	Packaged Computer Room Heating and Cooling Units		X		X												
236450	Heating and Ventilating Make Up Air Units		X		X												
236450	Condensate Pump		X														
236450	Fans		X														
236450	Electric Cabinet Heaters		X														

1-When Requested
2-Asbuilts After Project Completion

26 05 00	Common Work Results for Electrical		X														

260519	Raceway, Switch and Wiring Devices Wiring				X												
262400	Service and Distribution Switchboards		X		X												
262416	Fusible Circuit Breaker				X												
262400	Fusible Switches				X												
262400	Molded Case CKB's				X												
262416	Electrical Distribution System		X														
262923	Disc Switch Starters				X												
283111	Fire Alarm Panel				X												
283111	Fire Alarm System		X														
283111	Fire Alarm Devices				X												

28 31 11	digital, addressable fire-alarm system		X														

32 90 00	Tree Pit Construction	1			X												
	Tree Material	1			X												
	Maintenance Requirements	1			X												

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Rehabilitation and Upgrade of
DEP Shaft Maintenance Building
356 Flushing Avenue
Brooklyn, NY

Table of Contents
Contract No. 1 - General Construction

End of Table of Contents

CONTRACT # 1

GENERAL CONSTRUCTION WORK

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SECTION 01 54 23

SCAFFOLDING/STAGING
(Including Pedestrian Bridge)

Part 1 - GENERAL

1.01 GENERAL

A. Requirements set forth herein are in addition to and shall be considered as complementary to the DDC General Conditions and the balance of Division #1 and Technical Specifications.

B. All Contractors, Subcontractors, Sub-subcontractors, Vendors and the like shall be required to familiarize themselves with said provisions.

C. This Scaffold/Staging specification has been developed for the project in total including, but not limited to:
   1. Exterior masonry restoration and cleaning.
   2. Sidewalk protective/pedestrian passage on and around the total building and site.

D. The Contractor shall be responsible for the final design, fabrication, erection, and disassembly of the scaffolding systems, all supporting structure, and all related elements.

   The Contractor shall verify all information pertaining to existing conditions. All discrepancies between actual conditions and those shown in the contract documents shall be reported to the Commissioner for their evaluation before the affected construction is put in place. Contractor shall include a written description with his proposal of the means and methods to be employed in the execution of the work and the impacts on the operation and structural integrity of the existing structure. This description shall include required sketches, narrative and such other information that will aid the Commissioner in evaluating the proposed system. No approval will be formally issued by the Commissioner. Failure to issue a formal approval will not be cause for the Contractor to abandon the proposed and accepted system.

E. Exterior scaffolding will be installed continuously during regular working hours.

F. Verify all existing utilities that may be impacted by this Project. Protect and maintain existing active service and utility lines encountered.

G. Meetings shall be held, attended by the Commissioner, City Representative, the Contractor, and other involved parties for the purpose of coordinating procedures and operations prior to any work starting. During scaffold installation and removal, responsible individuals shall attend weekly meeting on site.

1.02 WORK INCLUDED

A. Exterior Staging/Scaffold
   1. The Contractor shall provide all labor, materials, equipment, services, supervision necessary for the complete installation

of the work as shown on the drawings and specified herein, including, but not limited to:

2. Pruning and protection of existing trees and other planting, under the direction of an Arborist in the employ of the contractor.
3. Fixed scaffolding, with all shoring and bracing as required, and all necessary lateral tiebacks between the scaffolding and the building structure. Scaffolding system shall be capable of providing access and work platforms for the entire exterior surface of the structure as impacted by the scope of this project and as outlined in Sections 04 01 00 and 04 40 00. The Contractor shall verify the existing allowable bearing capacity of the substrate to the start of design or procurement of the scaffolding materials. Scaffolding shall be used to support the Dead and Live Loads (minimum 75# live and that dead loading for stocking of masonry and/or other materials required for the execution of the work).
4. Stair towers providing access between all levels of the scaffolding.
5. Safety netting, toe guards, and all other required safety equipment.
6. All required relocation of planking, throughout the duration of the erected life of the scaffolding. All planking locations shall be confirmed with shop drawings supplied by the Contractor (prior to placement).
7. Installation of the electrical system for the scaffolding lighting, all equipment to be used on the scaffolding, lightning protection, and the fire detection system. The Contractor shall refer to the accompanying specifications for additional requirements.
8. Installation of all necessary pipes, hoses, etc. for the water drainage system.
9. Installation of all fences, plywood barriers, and locks as required.
10. Installation of all required safety, security, and fire egress signs. Signs are to be provided by the Contractor.
11. Maintenance of all the installations listed above.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. 04 01 00 - Masonry Restoration and Cleaning.
B. 04 40 00 - Stone Work

1.04 QUALITY ASSURANCE

A. Work to comply with the applicable provisions of the New York City Building Code, Federal OSHA, ANSI, and all other codes or regulations having appropriate jurisdiction. In the case of conflicting guidance between code requirements and this specification, the most stringent one shall apply.
   1. The Contractor shall comply with the following regulations and/ or standards:
      a. ANSI A10.5, Safety Requirements for Material Hoists, latest edition.

b. ANSI A 10.8, Construction and Demolition Operations - Scaffolding - Safety Requirements, latest edition.
c. OSHA 1910, latest edition.
d. OSHA 1926, latest edition.
e. all other applicable OSHA requirements.
f. Industrial Lead Paint Removal Handbook, published by the Steel Structures Painting Council, latest edition.

2. Scaffolding and shoring shall also conform to the recommendations of the Scaffolding and Shoring Institute including safety rules and erection procedures. Again, in the case of conflicting guidance between code requirements and this specification, the most stringent one shall apply.

B. Rubbish removal: All property shall be regularly kept broom clean and free of debris, rubbish, trash and obstructions of any kind caused by the work that will affect the safety of the streets, walks, utilities and property.

1.05 SUBMITTALS

A. Prepare and submit to Commissioner for review and distribution complete engineered shop drawings showing all shoring, bracing, support systems, the scaffolding system, the enclosure system, the tiebacks, stairs, and the walkways.

Show all details, sections, and calculations. Submit manufacturers' specifications and other data for all components. Provide certification that each product complies with the requirement of the Contract Documents.

B. The required engineering will be accomplished by a Professional Engineer (retained and paid for by the Contractor) licensed in the State of New York who can demonstrate experience in design of this type of system. Drawings and calculations shall be submitted to the Designer for review and comment only. ***Approval will not be granted since this scaffold operation is classified as "means and methods" and is within the sole province of the Contractor.***

C. Prior to submission of shop drawings involving existing conditions, make all necessary field observations, measurements and surveys.

D. Contractor will submit a written description of the installation sequence for the scaffolding, including time periods for each activity. The sequence and schedule to be reviewed with the Commissioner and, if required by the Commissioner, modified.

E. The Contractor shall submit a written plan showing all fire egress paths that are or may be affected by the Scaffolding. This plan shall show all required signage locations and all new doors, fences, barricades, panic hardware, etc. This shall be submitted to the Commissioner for review and concurrence; formal approvals will not be granted.

F. The Contractor shall submit requisite copies of all submittal materials to the Commissioner for review as outlined in DDC General Conditions.

1.06 INTERRUPTIONS TO BUILDING FACILITIES

A. While the work of contract is proceeding, the Contractor shall not

block any entrances to the building or significantly disturb the flow of pedestrian and vehicular traffic into and around the building without the express written permission of the Commissioner. Such interference shall be as brief as possible and only at time agreed upon, and coordinated with the Commissioner.

B. The contractor shall not interrupt any electrical, mechanical, plumbing or other building services, or utilize any space inside or outside the building and basements for storage without the express written permission of the Commissioner. The Contractor shall confirm in writing where all such penetrations, temporary shoring, or structural elements will impinge upon the occupancy or use of the building. This occupancy or use shall be approved by the Commissioner.

C. Prior to the erection of the scaffolding, the Contractor shall arrange a field meeting with building operations personnel and the Commissioner to coordinate all installation of shoring, scaffolding, and temporary utility systems.

1.07 DAMAGE

A. Should the building suffer damage of any nature during the installation of items listed herein, the Contractor shall report the conditions and circumstances to the Commissioner. If damage is due to Contractor's negligence, he shall pay at his own expense for all necessary repairs and replacements to such damage areas with new materials to identically match existing in every respect, as approved by the Commissioner.

B. Any staining of the building due to corrosion of the scaffolding or its accessories or from any other related cause shall not be permitted. The Contractor shall clean immediately, at his expense and at the Commissioner's direction, any stains resulting from the scaffolding installation, in a manner approved in writing by the Commissioner.

C. At the start of construction, the Contractor shall document using videotape and either "digital" or still 35mm photographs all existing conditions. The Contractor shall provide a copy (minimum 8 x 10) of these documents for use by the Commissioner.

1.08 SAFETY

A. The Contractor shall provide all necessary safeguards in conjunction with the performance of his work, such as netting, barricades, fences, etc. to protect the public, the building occupants, and the construction workers from injury.

B. The Contractor shall install all necessary safety hardware and signage as required to provide for safe fire egress from the building and the scaffolding. All fire egress paths that are affected by this construction shall have all appropriate signage to provide and maintain the safe use as fire egress passageways. The Contractor shall install all necessary panic bars, lighting to provide safe fire egress through all fences, barricades, doors, hallways, etc. that may effect movement through and out of the building. The Contractor shall verify these building requirements with the Building Fire Safety Coordinator. The Contractor shall

make sure that all safety hardware and signage is in conformance with the New York City Building Code.

1.09 MAINTENANCE AND INSPECTION

A. Contractor shall provide ongoing inspection and maintenance, including but not limited to: periodically, and not less than two times monthly, inspect scaffolding anchors and structure, etc. and make all necessary repairs and maintenance. Coordinate scheduled inspections with the Commissioner. As required, the Contractor shall have his engineer inspect the scaffolding and all supporting elements to verify that it is safe to occupy and use the scaffolding. This inspection and maintenance shall be provided as part of the Base Bid for the entire period of construction. This inspection and maintenance shall be provided in the monthly rental fee provided.

B. In addition to repairs resulting from ongoing inspections by the contractor, additional repairs shall be performed by the contractor as directed by the Commissioner. Within 24 hours of notice by the Commissioner or discovery by ongoing contractor inspections, contractor shall repair, or replace any portions of the scaffold or lighting system that are loose deteriorated or damaged.

C. Contractor maintenance obligations under this agreement shall include repair as well as replacement of defective electrical wiring, conduit, connections, fixtures, and sockets, to include and replace damaged electrical bulbs.

D. Contractor shall provide for periodic inspection of shoring to adjust/reinforce shoring to assure adequate performance of shoring for the total length of staging installation.

Part 2 - PRODUCTS

2.01 SCAFFOLDING

A. All materials used for the scaffolding shall be new or quality used frames and all shall be of a corrosion-resistant, non-rusting composition. All painted components shall be installed freshly painted with rust-inhibitive paint, substrate shall be rust free and prepared in accordance with paint manufacturer's recommendation. All scaffolding elements, dunnage, and any other exterior metal to be painted shall have a shop applied coat of primer and finish coat prior to delivery at site. All material once installed, where the shop coating has been compromised by scrapes, shall be spot primed and recoated. All materials shall be waterproof and be capable of withstanding the length of service without deteriorating.

B. All scaffolding accessories, including tiebacks, shall be corrosion-resistant. Any of these items which cannot be painted shall be of a non-corrosion material. All anchors into existing masonry walls shall be made of stainless steel (conforming to ASTM A276, grade 304). All anchors shall be removed by the Contractor at the completion of the work and any and all damage repaired as per specific requirements in Section 04 01 00 for repair type.

C. Scaffold planking shall be all new wood or aluminum capable of safely supporting 50 psf and 1,000 lbs. rolling load both imposed

simultaneously. The planking shall have mechanical anchorage to the scaffolding to prevent uplift. Joints between planks shall be flush, with no raised edges whether loaded or not. Planking shall meet the above criteria for the duration up to 5 years.

D. Scaffold stairs shall be "Waco Wedge Lok" Access Stair System or an approved equal. One set of stairs shall be passing stairs.

E. Safety Netting: Mesh size to be 1 inch square, center of knot to center of knot, weather stabilized and treated with special net coat formulation for maximum ultraviolet protection and bonding of the knitted fibers. Netting strength to be a theoretical 1,728 pounds per square foot and safe working load of 259 pounds per square foot. This netting is to be sewn to a perimeter nylon braided cord, 3/16 inch diameter, 1,030 tensile strength, with a special double overlocking stitch. Additionally, as required by field measurements, additional cords may be sewn into the net on verticals and horizontals to serve as special attachment points to the erected scaffold. Overall size of each panel to be determined by field conditions. Netting to be by Sterling Net and Twine Co., Inc. or approved equal in a color approved by the Commissioner.

F. Provide complete toe board guard system at all locations, both interior and exterior and all ends. Boards shall be a minimum of 8 inches in height unless required by governing codes to be in excess of 8 inches. Assembly shall be held in place with formed metal brackets and splice plates, no "jury-rigged" systems will be allowed.

G. Provide continuous guard rail systems at all framing at 30 inch and 42 inch heights throughout and at 60 inch height at top frame of each scaffold.

Part 3 - EXECUTION

3.01 REQUIREMENTS

A. All work shall be performed by workers skilled and experienced in the performance of work of this section. At the time of installation the Contractor shall post signs, erect barricades and station flagmen on the sidewalk and on the street to prevent accidents and for the protection of the public. The public will not be denied reasonable access during installation or removal.

B. Contractor shall provide all labor and materials necessary for the complete execution of the items listed below.

3.02 SCAFFOLDING - DESCRIPTION OF WORK

A. At the sidewalk level, bases shall be developed (e.g. grillage beams) for spreading and distributing loads to safely transfer the loads to the shoring and/or the soil. The load spreading bases shall be designed by the Contractor's engineer.

B. Unless noted otherwise, scaffolding to be designed so that a hoist machine and/or chainfalls capable of lifting a 1,000 lb. load can be rigged to it.

C. Differences in elevation are to be provided with ramps at a maximum slope of 1 to 4 (for the exterior scaffolding). Ramps to have non-slip surfacing applied. If any conflict with existing conditions is

discovered, the Contractor shall notify the Commissioner immediately.

D. Fences, barricades, black vinyl mesh and other items necessary for the channeling and protecting of pedestrian and vehicular traffic shall be provided as necessary in conjunction with the scaffolding.

E. Concrete type traffic barricades must be supplied and installed in all locations where required for vehicular safety. The Commissioner will confirm locations after receipt of written proposed locations from the Contractor. Barriers not to obstruct street drainage.

F. Safety netting shall be installed on the entire exterior face of the scaffolding per item 2.01 E. Netting to be in compliance with applicable codes and regulations.

G. Contractor to provide temporary protection of existing windows adjacent to the areas of scaffolding, shoring, bracing, hoists, stairs, as required to prevent any damage from occurring; this temporary protection does not include any sound proofing or baffling of the windows.

H. No work of modifying the Scaffolding, Shoring or Bracing will be permitted by any other contractor than the Scaffolding Contractor that erected these elements.

3.03 SCAFFOLDING TIEBACKS - DESCRIPTION OF WORK

A. The scaffolding shall be tied back to the building as required by all applicable laws and codes. Tiebacks are to be attached to the masonry of the building as approved by the Commissioner. The Contractor shall note that applicable building codes do not permit the permanent support or bracing of the exterior scaffolding to the existing structure.

B. The Contractor must submit the tieback system that they proposed to use to brace the interior scaffolding. The Contractor must submit tying schemes, sketches, and calculations. These drawings and calculations must be signed and sealed by a professional engineer licensed in the State of New York. Base bid must include price for all required tiebacks and their design.

C. There may be certain areas of the building where the Commissioner may not permit ties to be installed. At these locations, additional ties may have to be installed above and/or below these areas at no change in the Contract price.

D. There may be certain areas of building where ties may have to be skipped or cannot be installed due to the configuration of the proposed scaffolding system. In these locations, the Contractor must be prepared to develop for the approval of the Engineer, a means of bridging those areas by stiffening and/or reinforcing the scaffold, space frames, diaphragms, reinforcement or walkways, etc. The cost of this work is to be included in the base price.

E. Butt plates may be used against the exterior facade of the building for temporary erection only. The contractor shall inspect the facade prior to installation of butt plates. No butt plate shall be permitted against or close to stones, or joints that appear weakened, damaged or requiring remedial work. No butt plate shall be permitted close to openings or facade contour changes without the approval of the Engineer.

F. Shop drawing submittals shall indicate the type of tie to be used in every location on the building. The Commissioner may direct certain ties to be used at certain locations due to field conditions.

G. If any tie backs, beams, or other bracing/ supporting elements require anchorage into the existing masonry walls, the Contractor shall be responsible for returning the wall to its original condition after the completion of the work.

3.04 STAIRCASES - DESCRIPTION OF WORK

A. Staircases at the scaffolding shall be installed to provide personnel access as listed below, with stair landings at platform levels. Staircases shall be located so as not to impede the passage of personnel and material on the scaffold platforms. The Contractor shall supply all bridging walkways necessary to connect the staircases to the scaffolding.

B. Passing stairs shall be a minimum of 3 feet 9 inches wide, treads 8 inches minimum (excluding nosing), risers 8 inches maximum height (for each run of stairs). Other stairs shall be a minimum of 2 feet 6 inches wide (with treads 8 inches minimum (excluding nosing), risers 8 inches maximum height (for each run of stairs).

End of Section

SECTION 01 57 19

ENVIRONMENTAL PROTECTION DURING CONSTRUCTION

1.01 GENERAL

A. Requirements set forth herein are in addition to and shall be considered as complementary to the DDC General Conditions and the balance of Division #1 and Technical Specifications.

B. All Contractors, Subcontractors, Sub-subcontractors, Vendors and the like shall be required to familiarize themselves with said provisions.

1.02 REQUIREMENTS INCLUDED IN THIS SECTION

A. Scope
B. Applicable Regulations
C. Notification
D. Recording and Preserving Historical and Archaeological Finds
E. Protection of Water Resources
F. Burning
G. Dust and Mud Control
H. Maintenance of Pollution Control Facilities During Construction

1.03 SCOPE

A. The work covered by this section consists of furnishing all labor, material and equipment and performing all work required for the prevention of environmental pollution during and as the result of construction operations under this contract except for those measures set forth in other Technical Provisions of these specifications.

For the purpose of this specification environmental pollution is defined by regulatory authorities as the presence of chemical, physical or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and recreational purposes.

The control of environmental pollution requires consideration of air, water and land, and involves noise, solid waste-management and management of radiant energy and radioactive materials, as well as other pollutants.

B. Compliance with the provisions of this section by all Subcontractors shall be the responsibility of the Contractor.

1.04 APPLICABLE REGULATIONS

A. In order to provide for abatement and control of any environmental pollution arising from the construction activities of the Contractor and his subcontractors in the performance of this contract, they shall comply with all applicable Federal, State and local laws, and regulations concerning environmental pollution control and abatement as well as the specific requirements stated

elsewhere in the contract specifications.

1.05 NOTIFICATION

A. The Commissioner will notify the Contractor in writing of any non-compliance with the foregoing provisions.

The Contractor shall, after receipt of such notice, immediately take corrective action.

Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose.

If the Contractor fails or refuses to comply promptly, the Commissioner may issue an order stopping all or part of the work until satisfactory corrective action has been taken.

No part of the time lost on account of any such stop orders shall be made the subject of a claim for extension of time or for extra costs or damages by the Contractor unless it was later determined that the Contractor was in compliance.

1.06 RECORDING AND PRESERVING HISTORICAL AND ARCHAEOLOGICAL FINDS

A. All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved.

The Contractor shall leave the archaeological find undisturbed and shall immediately report the find to the Commissioner so that the proper authorities may be notified.

1.07 PROTECTION OF WATER RESOURCES

A. The Contractor shall not pollute streams, lakes, reservoirs or public waters with fuels, oils, bitumens, calcium chloride, acids or harmful materials. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County and Municipal laws concerning pollution of surrounding public waters. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in public waters through or adjacent to the project areas.

B. Prior to any major construction the Contractor shall submit a plan for approval by the Commissioner showing his scheme for controlling erosion and disposing of waste.

C. At all times of the year, special measures shall be taken to prevent chemicals, fuels, oils, grease, bituminous materials, waste washings, herbicides and insecticides, and cement and surface drainage from entering public waters.

D. Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to public waters shall be subject to the approval of the Commissioner. If any waste material is dumped in unauthorized areas the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall

be excavated, disposed of as directed by the Commissioner, refilled with clean material and compacted all at the expense of the Contractor.

1.08 BURNING

A. Burning will not be permitted.

1.09 DUST AND MUD CONTROL

A. The Contractor shall at all times provide adequate dust control measures. He shall accomplish this, without interference to the public and vehicular transportation.

B. To control dust, it is required that all vehicles transporting dust producing materials to and from the job shall be covered with tarpaulins securely tied down, be sprinkled when necessary or be satisfactorily treated by other approved methods.

C. Trucks leaving excavations shall be water washed prior to entry on access roads or public streets to remove mud and other deleterious substances from wheels and undercarriages.

D. All public and private ways adjacent to the site shall be broomed and flushed whenever necessary in the opinion of the Commissioner. Drainage systems shall be cleaned and flushed whenever mud or debris hinders the flow of storm water to or in the sewers.

E. The Contractor shall immediately remove refuse, rubbish, debris and soil accumulations on roads, streets and on sidewalks, caused by wind, rain and snow erosions or by his own operations to prevent traffic hazards or interference with road drainage.

1.10 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

A. During the life of this contract the Contractor shall maintain all facilities constructed for pollution control under this contract as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created. During the construction period the Contractor shall conduct frequent training courses for his maintenance personnel. The curriculum shall include methods of detection of pollution, familiarity with pollution standards, and installation and care of vegetation covers, plants and other facilities to prevent and correct environmental pollution.

End of Section

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SECTION 01 73 29

CUTTING AND PATCHING

1.01 GENERAL

A. Requirements set forth herein are in addition to and shall be considered as complementary to the DDC General Conditions and the balance of Division #1 and Technical Specifications.

B. All Contractors, Subcontractors, Sub-subcontractors, Vendors and the like shall be required to familiarize themselves with said provisions.

C. Provide materials, labor, equipment and services necessary and/or required to execute the work of this Section as shown on the drawings, specified herein and/or required by job conditions.

D. All cutting, removing, relocation, fitting, altering and rough patching for the installation and completion of his work in other than finished surfaces noted below shall be performed by the Trade or Subcontractor requiring said cutting and patching.

FINISH PATCHING SHALL BE BY THE RESPECTIVE TRADE OR SUBCONTRACTOR THAT NORMALLY DOES THAT FINISH WORK.

E. All finish patching of finished surfaces including - exposed concrete, concrete masonry, brick masonry, glazed masonry and the like shall be performed by the trade customarily involved with the finished work.

F. All coring and finish patching shall be performed by the Contractors requiring such coring work.

1.02 REQUIREMENTS INCLUDED IN THIS SECTION

A. Definitions

B. Cutting and Patching Requirements

1.03 DEFINITIONS

The following definitions shall apply to all work of this Contract involving cutting, patching, filling and the like.

A. Cutting - those operations required to expose existing construction, or required to permit the installation of work under this contract, or passage of new or relocated work through existing construction.

B. Patching - Those operations required to bring surfaces to a level to permit the application of a finish treatment.

The Contractor responsible for performing the patching shall be responsible for the restoration of the substrate to match adjacent areas, whether new or existing, except for the following conditions:

1. Exposed masonry, concrete or similar surfaces which do not require or call for painting.
2. Those patched surfaces which are wholly contained within an area which is to receive a new finish treatment as called for

elsewhere in the Contract Documents.

C. Replace - Shall mean to furnish and install an entirely new element which matches the original element's material, color, dimension and design.

D. Repair - Shall mean to make the existing element as nearly "new", as possible, by the means and methods indicated for each element.

E. Fill - Shall mean to carefully and thoroughly remove, by approved methods, loose and deteriorated surface material and to install "new" material in the element so that the original contour is completely restored and color matched if exposed as a finished element. Follow manufacturers' instructions as applicable.

F. Match Original - Where indicated, this type of replacement will match the best available representative element, in design, dimension, and installation, with improvements which represent the best standards of fabrication, so that even if an existing best example of an element is gouged or pitted, or otherwise worn, the new element shall be unworn and without defects and fabricated of new material. The Commissioner will provide identifications of all original elements.

1.04 CUTTING AND PATCHING REQUIREMENTS

A. Where cutting, drilling or removals are required in existing and/or newly constructed wall, floor or roof construction, the work shall be done in a manner that will safeguard and not endanger the structure, and shall, in all cases, be as approved by the Commissioner.

Prior to any cutting, drilling or removals, the Contractor shall investigate both sides of the surface involved, shall determine the exact location of adjacent structural members by visual examination, and shall avoid interference with such members.

No structural members such as joists, beams, columns supporting work that is to remain shall be cut, drilled or removed unless such conditions are shown in detail on the Contract Documents and reinforcing of members affected or new members to compensate for such drilling, cutting and removals are shown.

Positive instructions shall be obtained from the Commissioner before cutting beams or other structural members, arches, lintels and the like and the Contractor shall be guided by such instructions.

B. Each Trade Contractor shall provide all sleeves, inserts, hangers and the like required for the execution of their respective work; failing to provide such, said responsible Contractor shall reimburse the General Contractor who shall do all necessary cutting and patching required for the execution of his work.

Coordinate with Divisions 21 through 28 for sleeve types, packing of sleeves, pipe penetrations and duct openings for fire safing material and/or caulking; coordinate with Section 07 84 00 for firestopping systems.

C. No Contractor shall:
   1. endanger any work by cutting or drilling or otherwise;
   2. cut or alter the work of any other contractor except with the written consent of the Commissioner.
   3. cut or drill above the minimum needed to install work.

D. All holes cut through masonry exposed to view in the finished work and concrete slabs shall be core drilled except for specific holes that have been structurally detailed per Contract Documents.

The Contractor shall locate adjacent structural members before core drilling to insure that structural members are not damaged.

No jack hammering will be permitted in the work within any occupied portions of a structure.

E. Exposed patches and repairs shall be as inconspicuous as possible.

Where new work does not match exactly the color, finish, dimension, size and the like of the existing, the new work shall be carried across the surface to which it is applied and be continued to a natural stopping point or corner.

F. All cutting and patching shall be performed using skilled mechanics of the trade or craft involved.

Where two or more contractors are involved with work within same penetration, safing shall be performed by the trade with the largest share of the opening being used.

1.05 SPECIFIC REQUIREMENTS - ALL TRADES

A. The Contractor shall perform, or cause to have performed by nominated trade and/or subcontractors as defined in Paragraph 1.03 herein, all cutting, rough and finish patching required to install the work under the Contract and as indicated on the drawings and/or as required; further,

said contractor shall perform, or cause to have performed, all finish patching of openings at walls and slabs created by the removal of existing ductwork, piping, conduit, equipment or installation of new work.

B. Perform specific work for installation of new mechanical, plumbing, electrical, telecom and AV in existing exterior and interior masonry, concrete, stone, plaster and drywall walls. Patching where existing conduit and devices were surface mounted and required to be removed.

Part 2 - PRODUCTS - NOT USED

Part 3 - EXECUTION - NOT USED

End of Section

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT

Part 1 - GENERAL

1.01 GENERAL

A. Requirements set forth herein are in addition to and shall be considered as complementary to the DDC General Condition and the balance of Division #1 and Technical Specifications.

B. All Contractors, Subcontractors, Sub-subcontractors, Vendors and the like shall be required to familiarize themselves with said provisions.

1.02 SUMMARY

A. Work Included: The Work of this Section shall include but not be limited to the following:

1. Criteria for recycling and/or salvaging demolition and construction waste generated during the project.
2. Construction/Demolition Waste Management Plan.
3. Recycling nonhazardous demolition and construction waste.
4. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include the following:

1. The General Conditions and Division 1 Sections for temporary facilities and controls, environmental protection measures during construction, and location of waste containers at Project site.

1.03 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS

A. Requirements for Construction Waste Management

1. Overview: Prepare and submit a Construction Waste Management Plan (CWM) to the Commissioner for approval. The CWM Plan shall outline the provisions to be implemented to recycle and salvage demolition and construction waste generated during the project. The end-of-this Contract recycling rate shall equal, at minimum, 50% (by weight) of the total waste from construction, demolition, and land clearing activities

2. Upon approval of the CWM Plan by the Commissioner, it shall be implemented throughout the duration of the project, and documented in accordance with the Submittal Requirements.

B. Further Construction Waste Management requirements are as follows:

1. Construction Waste Management Plan: The Construction Waste Management Plan shall include, but not be limited to, the following components:

a. Listing of Targeted Materials: Develop a list of the waste materials from the Project that will be targeted for reuse, salvage, or recycling. The following materials shall be accounted for (materials that will not be recycled shall be indicated as such):

1. Cardboard, paper, packaging (Relates to construction.)
2. Clean dimensional wood, palette wood
3. Beverage containers
4. Concrete/Brick/Mortar
5. Metals (Aluminum, steel (standard and high carbon), etc.)
6. Plastics
7. Wood
8. Plywood and oriented strand board
9. Asphalt
10. Gypsum board (must be kept clean and dry.

b. Landfill Information: Provide the name of the landfill(s) where trash will be disposed of and the applicable landfill tipping feels).

c. Sorting Method: Provide a description of the proposed means of sorting and transporting the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site for offsite sorting).

d. Packaging Waste: Provide an estimate of packaging materials generated, and note whether suppliers will eliminate or take back packaging. (Relates to construction.)

e. Field Conditions: Include provisions in the Construction Waste Management Plan for addressing conditions in the field that do not adhere to the CWM Plan, including provisions to implement a stop work order, or to rectify non-compliant conditions.

f. Recycling Facilities: Provide the name of the recycling facilities(s) where materials will be sent for recycling, how it will be recycled, and the applicable fee(s).

g. Additional Information: Include any additional information deemed relevant to describe the scope and intent of the CWM Plan to the Commissioner

C. Subcontractor Requirements: Construction Waste Management and recycling requirements shall be incorporated into all Subcontractor's contracts.

1.05 SUBMITTALS

A. Construction Waste Management Plan: Submit 3 copies of plan within 14 days of date established for the Notice to Proceed.

B. Calculations and supporting documentation to demonstrate end-of-project recycling rates meeting the requirements for Construction Waste Management Plan of Item above. The process for recording and assembling documentation shall be as follows:

1. Record and document the total weight (in tons) of all demolition and construction waste materials sent to the landfill. The documentation shall specify:
   a. the number of dumpsters or other containers sent to the landfill;
   b. the volume (in cubic yards) of each dumpster or container sent to the landfill;
   c. the type of waste contained in each dumpster or container; and
   d. the weight of the waste in each dumpster or container.
   e. identification of the landfill.
   f. In addition, provide the name of the landfill that will be accepting the materials. Receipts or other proof of facility reception of these materials, as well as of the above requirements must be included.
2. Record and document the total weight (in tons) of all demolition and construction waste materials recycled or salvaged. The documentation shall specify:
   a. the number of dumpsters or other containers of recycled or salvaged materials;
   b. the volume (in cubic yards) of each dumpster or container of recycled or salvaged materials;
   c. the type of recycled or salvaged material contained in each dumpster or container; and the weight of the recycled or salvaged material in each dumpster or container.
   d. In addition, provide the name of the receiving facilities/companies that will be purchasing or accepting the recycled or salvaged materials. Receipts or other proof of facility reception of these materials, as well as <u>ALL</u> of the above requirements must be included.
   e. For materials separated for recycling off-site, establish a method for tracking the weight of the recycled material. The method shall be included in the CWM Plan for the Commissioner's review and approval.
3. Calculate the end-of-project recycling rate percentage by dividing the recycled and salvaged waste (in tons) by the total waste generated (recycled, salvaged, and landfilled waste (also in tons), and multiplying by 100.

C. Waste Reduction Progress Reports: Concurrent with the Applications for Payment, submit three copies of report. Include monthly tabulations for demolition and construction waste sent off-site for disposal or recycling.

1.06 QUALITY ASSURANCE

A. Waste Management Coordinator: General Contractor shall be the responsible party to insure the CWM plan is implanted.

B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference (s): At regular intervals before and during construction, meet with Commissioner to review methods and procedures related to waste management including, but not limited to, the following:

1. Review requirements for documenting quantities of each type of waste and its disposition.
2. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
3. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
4. Review waste management requirements for each trade.

Part 2 - PRODUCTS - NOT USED

Part 3 - EXECUTION

3.01 PLAN IMPLEMENTATION

A. General: Implement Construction Waste Management plan as approved by Commissioner. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct Waste Management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Location of designated on-site areas for salvage/reuse, recycling and other such requirements of the approved Construction Waste Management plan shall be indicated on the Drawings; if not indicated, as directed by the Commissioner.
2. Designated on-site CWM Plan mobilization/staging areas shall be clearly identified. Temporary signage, acceptable to the Commissioner, shall be employed to accurately maintain the separation of various materials that are to be salvaged, recycled, reused, donated, and sold.
3. Comply with requirements for controlling dust and dirt, environmental protection, and noise control.

3.02 RECYCLING DEMOLITION AND WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
   a. Inspect containers and bins for contamination and remove contaminated materials if found.
2. Stockpile processed materials on-site (in Commissioner designated locations) without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off New York City's property and transport to recycling receiver or processor; obtain the necessary receipts documenting recyclable waste content and quantity.

3.03 RECYCLING DEMOLITION WASTE

A. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
1. Pulverize concrete, for fill on site, to 1-1/2 inch size.

B. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

C. Metals: Separate metals by type.
1. Steel, Standard: Stack members according to size, type of member, and length.
2. Steel, High Carbon: Stack members according to size, type of member, and length.
3. Aluminum: Stack members according lo size, type of member, and length.
4. Remove and dispose of bolts, nuts, washers, and other rough hardware.

3.04 RECYCLING CONSTRUCTION WASTE

A. Packaging:
1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
5. Corrugated Plastic Panels: Separate, break-down, and stack profiled sheet materials.

3.05 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator 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 the New York City's property and legally dispose of them; obtain the necessary receipts documenting waste quantities.

End of Section

SECTION 02 41 00

DEMOLITION

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all demolition work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Exterior demolition work is generally included within Sections 04 01 00 for masonry work; 05 74 11 for cast iron restoration; 07 53 00 for existing membrane roof; 07 61 10 for metal roofing; 08 33 30 for rolling doors; and all related sections involving said work.
2. Interior demolition involves removals of items noted on Demolition drawings DM-101 through 104 inclusive and legal disposal of all items off the project site and NYC property.
3. Provide all temporary shoring systems as necessary in conjunction with the removal and new opening operations.
4. Cut new and/or enlarge existing openings in interior walls in sizes and locations as indicated. Coordinate with Sections 05 12 00 and 05 50 00 for miscellaneous iron and steel work and Divisions 4 and 9 for patching, filling and finishing of newly created openings.
5. Strip existing applied finishes including floors, walls, bases and ceiling systems as required to permit execution of the work of this project.
6. Cut off, cap, reroute, relocate and otherwise prepare all existing utility work, duct work and the like for the proper installation of the new work.
7. Protect all adjoining properties, site improvements and other amenities designated to remain from damage during the demolition operations required by the scope of work of this Project.
8. Properly protect existing plant functions and facilities from damage and dirt during construction operations.

NOTES:

1. In the event asbestos-contaminated materials are encountered during the demolition work of any Contractor, said Contractor shall immediately notify the Commissioner for instructions as to procedures to be taken. Demolition and removals shall be done in such a manner to permit the City of New Yorks' consultant and asbestos abatement contractor access to the areas as required to look for, identify and abate asbestos conditions before damaging possible asbestos. All Contractors shall cooperate with the City

of New Yorks' separate contractors to expedite abatement. The City of New York will arrange for timely inspection, testing and abatement if necessary.

2. The Contractor shall:
   a. Submit a schedule indicating proposed methods and sequence of operations for selective removals and demolition Work prior to commencement of operations. Include details for dust and noise control operation.
   b. Take photographs of existing conditions of structure surfaces, equipment and adjacent improvements that may be misconstrued as damage related to removal operations. These photographs shall be submitted to the Commissioner prior to start of any work.
   c. Provide temporary barricades and other forms of protection required to protect occupants of the building and general public from injury due to selective removals and demolition work.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above.

1.04 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies
   1. All work of this section will be accomplished in strict conformance to applicable provisions of the New York City Building Code.
   2. OSHA Code requirements governing demolition work.
   3. Comply with applicable requirements of American National Standards Institute (ANSI) Standard A10.6-1969, Safety Requirements for Demolition.

B. Do all demolition work only at such times and in such a manner as is approved by the City of New York and is in compliance with above referenced codes, documents, procedures, plans or instructions.

C. The work of this section shall be accomplished by a Contractor experienced in demolition work on projects of similar size and complexity within the past 5 years. Evidence of such experience on projects shall be submitted to the Commissioner for his evaluation.

D. Maintaining Traffic
   1. Ensure minimum interference with roads, streets, parking lots, driveways, sidewalks, paths and adjacent facilities.

E. Keep public ways clear of all spillage from trucks hauling material to and from the project site.

F. Strict dust control measures shall be implemented and maintained at all times.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Prior to commencement of any demolition operations, the contractor shall submit to the Commissioner, for review, a schedule for demolition, means and methods for pedestrian access as well as building ingress and egress, and the proposed methods to insure against possible damage to existing areas adjacent to where demolition operations will occur.
B. Permits, as applicable, for transport and disposal of debris and hazardous materials.
C. Material Safety Data Sheet (MSDS) must be submitted for each product.
D. Submit Waste Management Plan for review before start of job.

1.06 SAFETY AND PROTECTION

A. Carefully protect all work adjacent to areas in which work is to be done and areas used for access.
B. During the progress of the work take every precaution to avoid accidents and to protect the work, the occupants of the building, the employees of the City of New York and the public against damage and injury.
C. Where materials are stored in public areas or where work is in progress, protect same with fences, sheds, suitable barriers or guard rails and place electric lights on them at night.
D. Provide and maintain all protective devices, including fences, barricades, bracing, shoring, planking, guards, warning lights and signs, as necessary or required for protection against personal injury or damage to property. Conform to ANSI AIC. 6-1069. Comply with all requirements of the NYCDOT.

Part 2 - PRODUCTS

2.01 MATERIALS

A. Protective Devices and Materials shall be the Contractor's option, subject to approval of the Commissioner and in compliance with the reference standard.
B. Power driven Tools - only hand held electric power driven tools conforming to the following criteria shall be used to cut or drill concrete and masonry:
   1. Electric Chiseling Hammer
      a. Power Data 115 Volts AC; 7-8 Amps; Three wire grounded

connection
b. Percussion 2400-2600 Impacts per 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 per 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)
3. Electric Core Drill
   a. Power Data 115 Volts AC; 7-8 Amps; Three wire grounded connection
   b. Floor or wall anchored unit.
   c. Speed Data 0-1500 RPM (Under load)

Any other hand operated electric tools used for cutting, sawing or other operations shall be submitted to the Commissioner for approval prior to use for execution of the Work.

Part 3 - EXECUTION

3.01 INSPECTION AND VERIFICATION OF CONDITIONS

A. Examine all drawings covering the work of this Section and refer to all other drawings, including mechanical and electrical drawings, which may affect the work of this section or require coordination by this trade.

B. Visit the site, verify all conditions covering or affecting the work of this Section.

C. Before starting any work, make a thorough examination of those portions of the structure on which the work is to be performed to insure that areas to be demolished are unoccupied and discontinued in use.

D. Do not commence work until conditions are acceptable to the Commissioner.

NOTE: Failure to acquaint oneself with all known or apparent conditions will not be cause for extra compensation. Coordinate with "Conditions".

3.02 SALVAGE

A. Prior to the actual start of demolition and removal operations, the Contractor and the Commissioner shall inspect the overall premises for equipment and accessories to be salvaged including both those shown on the Drawings and such additional items as may be required by the City of New York.

B. All items designated to be saved will be tagged in a suitable manner for disposition.

C. Carefully remove all such items to be reused, stored and the like and store same where directed by the Commissioner.

D. Replace marred or damaged items without cost to the City of New York.

3.03 DEMOLITION

A. Perform selective demolition Work in a systematic manner and use such methods as required to complete the Work indicated on the Drawings in accordance with the requirements of the Project Specifications and governing City, State, and Federal regulations.

B. Do no demolition or remove any items until it is certain that a condition will not be created which might jeopardize the weathertightness or structural adequacy of the existing building.

C. Demolish masonry walls and structural elements in small sections.

D. Do not throw rubbish or old materials of any kind from the upper stories to any point outside the building.

E. Proceed with the work of demolition and removal in an orderly manner and without noise or other disturbance to the operations of the existing facility.

3.04 TEMPORARY SHORING

A. Execute all temporary shoring, bracing, framing and protection of existing walls and other affected portions of the structure which are designated to remain in place prior to start of demolition and/or to be altered as a result of the proposed construction work.

B. Provide shoring in such a manner as to prevent any settlement or vertical or horizontal deformation of the existing structure. Before commencing with the work the Contractor shall thoroughly investigate the existing structure to verify its present condition. Benchmark reference points shall be established on all elements prior to start of operations to provide a monitoring basis for performance.

C. Temporary shoring shall be performed by a subcontractor thoroughly experienced in this type of work. Shoring shall be designed by a Professional Engineer, licensed in the Jurisdiction and retained by the Contractor at no additional expense to the City of New York. Said Engineer shall prepare and submit drawings, to the Commissioner, for his review, showing all features of the work. The Contractor shall be fully and solely responsible for all design and installation of the shoring.

D. Shores shall consist of steel members or substantial timbers free from splits, holes, notches, warpage or other deformation. Sizes shall be adequate to support the imposed loadings.

E. Shore walls by needling, shimming, drypacking, etc., in a neat and safe manner. Do not cut holes in walls where they would be exposed in the finished work unless there is no alternate method of needling.

F. Plan removal of shoring carefully so as to transfer loads uniformly and without impact to new structural elements.

G. The Contractor shall be fully responsible for the existing structure during all shoring operations.

3.05 DISPOSAL - COORDINATE WITH WASTE MANAGEMENT PLAN

A. Remove all debris and refuse materials from the premises as rapidly as demolition progresses.

B. Rubbish shall not be allowed to accumulate. Remove rubbish from job site each day and leave premises and work in a clean condition.

Loose rubbish shall not be piled on or near the premises. The City of New York's refuse facilities shall not be used and rubbish shall not be placed in City of New York's dumpsters, incinerators, garbage or rubbish containers or the like. Location of rubbish containers shall be cleared with the Commissioner before placement.

C. Fires for burning of rubbish and debris or any other purposes are forbidden. This prohibition will be continuously enforced by the Commissioners.

D. All materials resulting from the demolition operations shall become the property of the Contractor and he shall dispose of all debris OFF THE SITE. Hazardous materials are to be transported and disposed of by a licensed toxic waste transporter in accordance with applicable Local, State and/or Federal regulations. Most stringent regulations shall govern.

E. No storage of materials resulting from the demolition operations will be permitted on the site.

3.06 CLEANUP AND REPAIR

A. Upon completion of removals and demolition Work, remove tools, equipment and all remaining demolished materials from the site.

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."

End of Section

SECTION 280013 – 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 **$30,000.00** 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 Asbestos abatement 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 then 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;

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 N1OSH 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"	l4"	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 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 1.09, multiplied by the unit price in Section 1.05.

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.

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

SPECIFICATIONS FOR ABATEMENT OF ASBESTOS-CONTAINING MATERIALS ASSOCIATED WITH

NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION (NYC DEP) REHABILITATION AND UPGRADE OF NYC DEP SHAFT MAINTENANCE BUILDING 356 FLUSHING AVENUE BROOKLYN, NEW YORK 11205

Prepared For:

NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

Bureau of Environmental and Geotechnical Services
30-30 Thomson Avenue, 5th Floor
Long Island City, New York 11101

Prepared By:

LiRo Engineers, Inc.
Three Aerial Way
Syosset, New York 11791

Final Submission Date: 12/27/2012

DDC Capital Project Number: EP6-KENT2
Work Order Letter Number: 8579-LIRO-2-8053
Task No. 8579
LiRo's Project Number: 10-62-205-110
Contract Registration Number: 20101417627
Contract Registration Date: April 21, 2010

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SECTION 028213

ASBESTOS ABATEMENT

PART 1 – GENERAL

1.01 DESCRIPTION

A. The Contract Documents are as defined in the "Agreement". The General Conditions shall apply to all Work of this Section.

B. Work specified herein shall be the removal and disposal of Asbestos-Containing Materials (ACM) and asbestos-contaminated materials from designated areas of the NYC Department of Environmental Protection Shaft Maintenance Building, located at 356 Flushing Avenue, Brooklyn, New York, 11205.

C. The following documents were reviewed and utilized to generate this abatement design specification which serves to locate and quantify the amount of ACM, and asbestos contaminated material, to be abated in support of this project.

1. Preliminary Set of drawings issued for 75% Design Drawings dated April 13, 2012 and labeled "BWSO – Shaft Maintenance Facility" by Deborah Berke & Partners Architects, LLP. were used as the basis for surveying efforts

2. Asbestos Survey Report titled "Final Report of Asbestos Survey Services Asbestos NYC Department of Environmental Protection (NYCDEP) Rehabilitation and Upgrade of NYC DEP Shaft Maintenance Building" dated 11/12/2012 that was performed at this location by LiRo Engineers, Inc.

D. The phasing and scheduling of work for this project shall be coordinated with and approved by the Construction Project Manager and Facility Manager. The Construction Project Manager and Facility Manager will make the final determination on all issues under this Contract covered by this Specification.

1.02 SCOPE OF WORK

A. Contractor is to provide all labor, materials, equipment, services, testing, appurtenances, permits and agreements necessary to perform the work required for the abatement of ACM as required by these contract documents. All work shall be performed in accordance with this Specification, EPA regulations, OSHA regulations, New York City Local Law 70, Title 15, Chapter 1 RCNY, New York State Industrial Code 56, NIOSH recommendations, and any other applicable federal, state or local government regulations. Whenever there is a conflict or overlap of the above references, the most stringent provisions are applicable.

B. The intent of this Specification section is to ensure that the Contractor is responsible for the following:

1. Abatement of all ACM.

2. Cleaning and decontamination of the entire affected area.

3. Demolition that may be required to access ACM in each area, Contractor shall dispose of all debris associated with demolition activities as ACM waste.

4. Removal and disposal of all ACM found within these areas such as duct vibration cloth, roof membrane, roof flashing material, etc.

5. Provide all scaffolding, platform installation, equipment, tools, transportation and any other equipment required and/or necessary to complete all work described in the Contract Documents.

6. The Contractor shall be responsible for and shall include in its Bid any and all fees or changes imposed by Local, State or Federal Law, Rule or Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the date of the Bid opening.

7. Prior to destructive demolition activities, the DDC may elect to collect bulk samples of assumed asbestos-containing materials and analyze the bulk samples for asbestos content.

C. Contractor shall perform the following work as described below and indicated on the drawings. The drawings are only a diagrammatic representation of the Work Areas and do not constitute the actual quantities of material. Contractor is responsible for the confirmation of the actual total quantities of the Work to be performed prior to Bidding.

1. Drawing H002.00: Asbestos Abatement Second Floor Courtyard Roof

a. Remove and dispose of asbestos-containing roof base flashing – black, and roof miscellaneous flashing - black (vents, drains, stacks and hvac units) within **Work Area 1.** Asbestos-containing roof base flashing – black, and roof miscellaneous flashing - black (vents, drains, stacks and hvac units) shall be removed utilizing NYCDEP Section § 1-107 – "Foam Procedure for Roof Removal".

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
1	NYCDEP Section § 1-107 Foam Procedure for Roof Removal Site Specific Variance to Allow a Window Within Airlock/Decon Due to Egress Restriction Onto Courtyard, For DEP Code Rule Compliance	750 Sq Ft of ACM Roof Base Flashing, Black Roof Miscellaneous Flashings, Black (vents, drains, stacks, & HVAC units)	--

2. Drawing H003.00: Asbestos Abatement Roof

a. Remove and dispose of asbestos-containing exterior on roof door frame caulk - white, exterior on bulkhead façade tar - black, exterior on bulkhead tar cement remnants at steps - black, exterior on bulkhead caulk on bulkhead counter flashing, old type 2 - grey within **Work Area 2.** Asbestos-containing exterior on roof door frame caulk - white, exterior on bulkhead façade tar - black, exterior on bulkhead tar cement remnants at steps - black, exterior on bulkhead caulk on bulkhead counter flashing, old type 2 - grey shall be removed utilizing NYCDEP Section § 1-109 – "Abatement from Vertical Exterior Surfaces".

b. Remove and dispose of asbestos-containing tar patch on roof membrane - black within **Work Area 3.** Asbestos-containing tar patch on roof membrane – black, shall be removed utilizing NYCDEP Section § 1-107 – "Foam Procedure for Roof Removal".

c. Remove and dispose of assumed asbestos-containing roof chimney lining - black within **Work Area 4.** Assumed asbestos-containing roof chimney lining – black, shall be removed utilizing NYCDEP Section § 1-109 – "Abatement from Vertical Exterior Surfaces".

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
2	NYCDEP Section § 1-109 Abatement From Vertical Exterior Surfaces	1 Sq. Ft. of ACM Exterior on Roof Door Frame Caulk – White	--
		5 Sq. Ft. of ACM Exterior on Bulkhead Façade Tar – Black	
		3 Sq. Ft. of ACM Exterior on Bulkhead Tar Cement Remnants at Steps – Black	
		3 Sq. Ft. of ACM Exterior on Bulkhead Caulk on Counter Flashing, Old Type 2 – Grey	

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
3	NYCDEP Section § 1-107 Foam Procedure for Roof Removal	6 Sq. Ft. of ACM Tar Patch on Roof Membrane – Black	--
4	NYCDEP Section § 1-109 Abatement From Vertical Exterior Surfaces	20 Sq. Ft. of ACM (2 Chimneys) Roof Chimney Lining – Black	--

3. **Drawing H004.00: Asbestos Abatement Exterior Cellar Perimeter Facade**

   a. Remove and dispose of asbestos-containing exterior window old frame caulk remnants – white within **Work Area 5.** Asbestos-containing exterior window old frame caulk remnants – white, shall be removed utilizing NYCDEP Section § 1-109 – "Abatement from Vertical Exterior Surfaces".

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
5	NYCDEP Section § 1-109 Abatement From Vertical Exterior Surfaces	23 Sq. Ft. of ACM Exterior Window Old Frame Caulk Remnants – White * (17 Masonry Openings – 544 Ln. Ft.)	--

* - Cellar Masonry Openings and Aluminum windows, remnant old caulk on Brick Including filled in Cellar CMU window areas.

4. **Drawing H005.00: Asbestos Abatement Exterior First Floor Perimeter Facade**

   a. Remove and dispose of asbestos-containing exterior window frame caulk, type 2 (older bottom layer) – beige within **Work Area 6.** Asbestos-containing exterior window frame caulk, type 2 (older bottom layer) – beige shall be removed utilizing NYCDEP Section § 1-109 – "Abatement from Vertical Exterior Surfaces".

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
6	NYCDEP Section § 1-109 Abatement From Vertical Exterior Surfaces	126 Sq. Ft. of ACM Exterior Window Frame Caulk, Type 2 (older bottom layer) – Beige ** (43 Masonry Openings – 3,010 Ln. Ft.)	--

** - First thru Second Floors at Facade - Cast Iron Curtain Wall Window Systems, including Main Entrance.

5. Drawing H006.00: Asbestos Abatement Exterior Second Floor Courtyard Facade

a. Remove and dispose of asbestos-containing exterior window old frame caulk remnants – white, and exterior window frame caulk, type 2 (older bottom layer) – beige within **Work Area 7.** Asbestos-containing exterior window old frame caulk remnants – white, and exterior window frame caulk, type 2 (older bottom layer) – beige shall be removed utilizing NYCDEP Section § 1-109 – "Abatement from Vertical Exterior Surfaces".

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
7	NYCDEP Section § 1-109 Abatement From Vertical Exterior Surfaces Site Specific Variance to Allow a Window Within Airlock/Decon Due to Egress Restriction Onto Courtyard, For DEP Code Rule Compliance	6 Sq. Ft. of ACM Exterior Window Old Frame Caulk Remnants – White (4 Masonry Openings – 128 Ln. Ft.)	--
		15 Sq. Ft. of ACM Exterior Window Frame Caulk, Type 2 (older bottom layer) – Beige (5 Masonry Openings – 350 Ln. Ft.)	--

6. **Drawing H007.00: Asbestos Abatement Exterior Third Floor Perimeter Facade**

a. Remove and dispose of asbestos-containing exterior window old frame caulk remnants – white within **Work Area 8.** Asbestos-containing exterior window old frame caulk remnants – white, shall be removed utilizing NYCDEP Section § 1-109 – "Abatement from Vertical Exterior Surfaces".

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
8	NYCDEP Section § 1-109 Abatement From Vertical Exterior Surfaces	62 Sq. Ft. of ACM Exterior Window Old Frame Caulk Remnants – White (46 Masonry Openings – 1,472 Ln. Ft.)	--

7. **Drawing H008.00: Asbestos Abatement Exterior Third Floor Courtyard Facade**

a. Remove and dispose of asbestos-containing exterior window old frame caulk remnants – white, and exterior window frame caulk, type 2 (older bottom layer) – beige within **Work Area 9.** Asbestos-containing exterior window old frame caulk remnants – white, and exterior window frame caulk, type 2 (older bottom layer) – beige shall be removed utilizing NYCDEP Section § 1-109 – "Abatement from Vertical Exterior Surfaces".

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
9	NYCDEP Section § 1-109 Abatement From Vertical Exterior Surfaces Site Specific Variance to Allow a Window Within Airlock/Decon Due to Egress Restriction Onto Courtyard, For DEP Code Rule Compliance	6 Sq. Ft. of ACM Exterior Window Old Frame Caulk Remnants – White (4 Masonry Openings – 128 Ln. Ft.)	--
		6 Sq. Ft. of ACM Exterior Window Frame Caulk, Type 2 (older bottom layer) – Beige (2 Masonry Openings – 140 Ln. Ft.)	--

D. The facility is under the jurisdiction of the NYC Department of Environmental Protection (NYC DEP). The contractor shall perform the work of this contract in a manner that will be least disruptive to the normal use of the building.

E. Contractor's attention is directed to the fact that patents cover certain methods of asbestos abatement indicated in the specifications. To date, patents have been issued with regard to negative pressure enclosures or negative or reduced pressure and glove-bag.

F. Contractor shall be solely responsible for and shall hold the City of New York Department of Design and Construction and the City harmless from, any and all damages, losses and expenses resulting from any infringement by Contractor of any patent, including but not limited to the patents described above, used by Contractor during performance of this agreement.

G. Prior to starting, the General Contractor must notify the Commissioner of the City of New York Department of Design and Construction if he anticipates any difficulty in performing the work as directed and required by these Specifications. Contractor shall be required to attend an on-site job meeting with the Construction Project Manager prior to start of work to examine conditions of the site for removal and plan the sequence for removal operations.

H. The Contractor shall retain a certified Project Designer for the preparation of an Asbestos Variance Application (ACP-9), if required.

I. The Contractor shall be responsible for preparing and submitting all filings, notifications, amendments and variances, etc. required by all City, State and Federal regulatory agencies having jurisdiction, at no additional cost to the NYC DDC.

J. The Contractor shall retain a Registered Design Professional (person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York) to prepare a Work Place Safety Plan (WPSP), if required.

K. The General Contractor shall retain a Registered Design Professional (person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York) to perform final inspections required pursuant to Title 28 of the Administrative Code, including but not limited to special inspections required under Chapter 17 of the Building Code. Such special inspections and A-TR1 forms shall be completed by the Registered Design professional.

L. For coordination with other Contractors, see the General Conditions governing all Contracts.

M. Related Asbestos Removal Work Under Other Contracts:

1. Each Contractor shall be responsible for the removal of incidental asbestos not identified in this section and found prior to or during the Work.

2. Incidental asbestos is defined as ACM that is discovered during the course of their work that must be abated to enable them to perform the work of their Contract.

N. Work Hours:

1. The Contractor shall establish his work schedule in a way that avoids interference or conflict with the normal functioning of the facility. Work in the evenings shall be done at no additional cost to the City.

2. All work shall be done during regular working hours unless the Contractor requests authorization to work other than regular working hours and such authorization is granted by the Commissioner (Regular working hours are those during which any given facility in which work is to be done is customarily open and functioning). If such work schedule is authorized by the Commissioner the work shall be done at no additional cost to the City.

3. The order of phases and start dates associated with each will be determined by the Construction Project Manager.

4. Contractor shall be required to schedule waste transfer during evening hours, when activity within the facility is at a minimum. Evening hours are defined as 6:00 p.m. to 6:00 a.m. Waste transfer must be approved by the Construction Project Manager and Facility Manager.

N. The following conditions shall apply to all temporary shutdowns of existing services:

1. All temporary lighting and temporary electrical services for use in the Work Area shall be in weather proof enclosures and be ground fault protected and:

2. Shall be performed at no additional charge to the City.

3. Shall be performed at times not interfering with the other activities in the building.

4. Shall be performed only with written consent from the Commissioner and the Facility Manager.

5. Shall be made through written request to the Commissioner at least 10 days in advance with complete written description of the work to be performed.

O. Stages of Asbestos Removal Work:

a. The Abatement Contractor will be required to perform the work and it is the intent of this Specification to remove all asbestos containing and asbestos contaminated materials from the Work Area. The Contractor is responsible for verifying all quantities of materials listed here and Bid accordingly.

P. Certain equipment in the Work Area may need to remain operational during removal. Therefore, the removal of ACM from this equipment shall be performed as the last removal activities within the Work Area. The Contractor shall coordinate the scheduling for the removal of ACM on functioning equipment with the Construction Project Manager.

1.03 SPECIAL EXPERIENCE REQUIREMENTS FOR ASBESTOS ABATEMENT

A. General: The special experience requirements set forth in Paragraph B below apply to the bidder for this contract.

1. Evaluation: Compliance with the special experience requirements will be evaluated at the time of the bid. The bidder is advised that failure to meet such special experience requirements will result in the rejection of the bid as non-responsive. Compliance with the experience requirements set forth herein will be determined solely by the City.

2. Compliance by the Bidder as an Entity: Compliance with the special experience requirements must be demonstrated by the BIDDER ITSELF, i.e., the actual entity submitting the bid. The bidder itself must have been in existence as the same entity for the three year period prior to the bid opening. During such period, the bidding entity itself must have achieved compliance with the special experience requirements. The bidding entity may not use or rely on the experience or credentials of any other entity; regardless of any relationship such other entity may have to the bidder.

B. Requirements: The bidder must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (5) below. The bidder must, as part of its bid, submit documentation demonstrating compliance with all listed requirements. Such documentation shall include without limitation, all required licenses, certificates, and documentation.

1. The bidder must, whether an individual, corporation, partnership, joint venture or other legal entity, demonstrate for the three year period prior to the bid opening, that it has been licensed by the New York State Department of Labor, as an "Asbestos Contractor".

2. The bidder must, for the three year period prior to the bid opening, have been in the business of providing asbestos abatement services as a routine part of its daily operations.

3. The bidder (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 $1,000,000 in each of the three years.

4. For each project submitted to meet the experience requirements set forth above, the bidder 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 bidder's work; brief description of the work completed as a prime or sub-contractor; amount of contract or subcontract and the date of completion.

5. The bidder 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 bidder 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.

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. Provide materials or workmanship that meet or exceed the specifically named codes or standards where required by these specifications.

D. Site Investigation: Contractor shall inspect all the specifications and related drawings, and will investigate and confirm the site conditions affecting the work, including, but not limited to:

1. Physical considerations and conditions of both the material and structure. These considerations include any obstacles or obstructions encountered in accessing or removing the material.

2. Handling, storage, transportation and disposal of the material.

3. Availability of qualified and skilled labor.

4. Availability of utilities.

5. Exact quantities of all materials to be disturbed and/or removed.

1.04 WORK BY OTHERS

The City reserves the right during the term of this Contract to have work performed on asbestos abatement projects by other Contractors as the situation warrants.

1.05 DEFINITIONS

A. General Explanation: Certain terms used in this Specification Section are defined below. Definitions and explanations of this Specification Section are not necessarily complete or exclusive, but are general for the Work to the extent they are not stated more explicitly in another element of the Contract Documents.

B. Definitions in General Use:

1. Approve: Where used in conjunction with Engineer's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be held to limitations of Engineer's responsibilities and duties as specified in Contract Documents. In no case will "approval" by Engineer be interpreted as a release of Contractor from responsibilities to fulfill requirements of Contract Documents.

2. Directed, Requested, etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by Engineer," "requested by Engineer," and similar phrases. However, no such implied meaning will be interpreted to extend Engineer's responsibility into Contractor's responsibility for construction supervision.

3. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

4. Indicated: The term "indicated" is a cross-reference to graphic representations, notes or schedules on Drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.

5. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at Project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.

6. Installer: The term "installer" is defined as the entity (person or firm) engaged by Contractor, or its subcontractor or sub-subcontractor for performance of a particular unit of work at Project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (installers) be expert in operations they are engaged to perform.

7. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

8. Third-Party Air Monitor: The term "Third-Party Air Monitor " is defined as an entity engaged by City and Construction Project Manager to perform specific inspections or tests of the work, either at Project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.

C. Definitions Relative to Asbestos Abatement:

1. Abatement: Any and all procedures physically taken to control fiber release from asbestos-containing materials. This includes removal, encapsulation, enclosure, cleanup and repair.

2. Adequately Wet: The complete penetration of a material with amended water to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then the material has not been adequately wetted. However, the absence of visible emissions is not evidence of being adequately wet. ACM must be fully penetrated with the wetting agent in order to be considered adequately wet. If the ACM being abated is resistant to amended water penetration, wetting agent shall be applied to the material prior to and during removal as necessary to minimize fiber release.

3. Aggressive Sampling: Method of sampling in which the individual collecting the air sample creates activity by the use of mechanical equipment during the sampling period to stir up settled dust and simulate activity in that area of the building.

4. AHERA: Asbestos Hazard Emergency Response Act of 1986

5. AIHA: American Industrial Hygiene Association.

6. Airlock: System for permitting entrance and exit while restricting air movement between a contaminated area and an uncontaminated area. It consists of two curtained doorways separated by a distance of at least three feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding

through the second doorway, thereby preventing flow-through contamination.

7. Air Sampling: Process of measuring the fiber content of a known volume of air collected during a specific period. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400, or the provisional transmission electron microscopy methods developed by the US EPA which is utilized for lower detection levels and specific fiber identification.

8. Ambient Air Monitoring: "Ambient air monitoring" shall mean measurement or determination of airborne asbestos fiber concentrations outside but in the general vicinity of the worksite.

9. Amended Water: Water to which a surfactant has been added.

10. ANSI: American National Standards Institute

11. Area Air Sampling: Any form of air sampling or monitoring where the sampling device is placed at some stationary location.

12. Asbestos: Any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthophyllite and actinolite.

13. Asbestos-Containing Material (ACM): Asbestos or any material containing more than one-percent asbestos.

14. Asbestos-Containing Waste Material: ACM, asbestos-contaminated objects or debris associated with asbestos abatement requiring disposal.

15. Asbestos-Contaminated Objects: Any objects which have been contaminated by asbestos or asbestos-containing material.

16. Asbestos Assessment Report: "Asbestos Assessment Report" shall mean the "Form ACP-5" form, as approved by NYCDEP, by which a NYCDEP-certified asbestos investigator certifies that a building or structure (or portion thereof) is free of ACM or the amount of ACM to be abated constitutes a minor project.

17. Asbestos Handler: Individual who disturbs, removes, repairs, or encloses asbestos material. This individual shall have completed approved training course(s) and be in possession of certification issued by NYCDEP and NYSDOL.

18. Asbestos Handler Supervisor: Individual who supervises the handlers during an asbestos project and ensures that proper asbestos abatement procedures

as well as individual safety procedures are being adhered to. This individual shall have completed approved training course(s) and be in possession of certification issued by NYCDEP and NYSDOL.

19. Asbestos Investigator: An individual certified by NYCDEP as having successfully demonstrated his or her ability to identify the presence of and evaluate the condition of asbestos in a building or structure.

20. Asbestos Project: Any form of work performed in a building or structure which will disturb (e.g., remove, enclose, encapsulate) more than 25 linear feet or more than 10 square feet of asbestos-containing material.

21. ASTM: American Society for Testing and Materials.

22. Asbestos Project Notification: The "Form ACP-7" asbestos project notification form as approved by DEP.

23. Authorized Visitor: Authorized visitor shall mean the building owner and his/her representative, and any representative of a regulatory or other agency having jurisdiction over the project.

24. Building Owner: Person in whom legal title to the premises is vested unless the premises are held in land trust, in which instance Building Owner means the person in whom beneficial title is vested.

25. Building Materials: Any and all manmade materials, including but not limited to interior and exterior finishes, equipment, bricks, mortar, concrete, plaster, roofing, flooring, caulking, sealants, tiles, insulation, and outdoor paving such as sidewalks, paving tiles and asphalt.

26. Certified Industrial Hygienist (CIH): Individual with a minimum of five years experience as an industrial hygienist and who has successfully completed both levels of the examination administered by the American Board of Industrial Hygiene and who is currently certified by that board.

27. Certified Safety Professional (CSP): Individual having a bachelor's degree from an accredited college or university and a minimum of four years experience as a safety professional and who has successfully completed both levels of the examination administered by the Board of Certified Safety Professionals and who is currently certified by that board.

28. Chain of Custody: "Chain of Custody" shall mean the form or set of forms that document the collection and transfer of a sample.

29. City: City of New York

30. Clean Room: An uncontaminated area or room that is part of worker decontamination enclosure system with provisions for storage of workers' street clothes and protective equipment.

31. Clearance Air Monitoring: Employment of aggressive sampling techniques with a volume of air collected to determine the airborne concentration of residual fibers and shall be performed as the final abatement activity.

32. Commissioner: shall mean the head of the Agency that has entered into this contract or his/her duly authorized representative.

33. Competent Person: Shall mean the designated person as defined by OSHA in 29 CFR1926.1101.

34. Curtained Doorway: Device that consists of at least three overlapping sheets of fire retardant plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to ensure that the sheets hang straight and maintain a seal over the doorway when not in use.

35. Decontamination Enclosure System: Series of connected rooms, separated from the Work Area and from each other by air locks, for the decontamination of workers, materials, waste containers, and equipment.

36. Demolition: The dismantling or razing of a building, including all operations incidental thereto (except for asbestos abatement activities), for which a demolition permit from the New York City Department of Buildings is required.

37. NYCDEP or DEP: The New York City Department of Environmental Protection.

38. Disturb: Any action taken which may alter, change, or stir, such as but not limited to the removal, encapsulation, enclosure or repair of asbestos-containing material.

39. DOB: The New York City Department of Buildings.

40. Egress: A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.

41. ELAP: Environmental Laboratory Approval Program administered by the New York State Department of Health.

42. Encapsulant (sealant) or Encapsulating Agent: Liquid material which can be applied to ACM and which temporarily controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

43. Encapsulation: The coating or spraying of asbestos-containing material encapsulant. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

44. Enclosure: Construction of airtight walls and/or ceilings between ACM and the facility environment, or around surfaces coated with ACM, or any other appropriate procedure as determined by the NYCDEP which prevents the release of asbestos fibers.

45. EPA or USEPA: United States Environmental Protection Agency.

46. Equipment Room: Contaminated area or room that is part of the worker decontamination enclosure system with provisions for the storage of contaminated clothing and equipment.

47. Exit: That portion of a means of egress system which is separated from other interior spaces of a building or structure by fire-resistance-rated construction to provide a protected path of egress travel between the exit access and the exit discharge.

48. DYCD: Department of Youth & Community Development

49. DFTA: Department For The Aging

50. Fiber: An acicular single crystal or a similarity elongated polycrystalline aggregate which displays some resemblance to organic fibers by having such properties as flexibility, high aspect ratio, silky luster, axial lineation, and others, and which has attained its shape primarily through growth rather than cleavage.

51. Fixed Object: A unit of equipment, furniture, or other item in the work area which cannot be removed from the work area. Fixed objects shall include equipment, furniture, or other items that are attached, in whole or in part, to a floor, ceiling, wall, or other building structure or system or to another

fixed object and cannot be reasonably removed from the work area. Fixed objects shall also include pipes and other equipment inside the work area which are not the subject of the asbestos project. Active fire suppression system components shall not be considered fixed objects.

52. Glovebag technique: shall mean a method for removing asbestos-containing material from heating, ventilation and air conditioning (HVAC) ducts, short piping runs, valves, joints, elbows, and other nonplanar surfaces. The glovebag assembly is a manufactured device consisting of a large bag (constructed of at least 6-mil transparent plastic), two inward-projecting long sleeve gloves, one inward-projecting waterwand sleeve, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process.

53. HEPA-Filter: High efficiency particulate air filter capable of trapping and retaining 99.97 percent of particles (asbestos fibers) greater than 0.3 micrometers mass median aerodynamic equivalent diameter.

54. HEPA vacuum equipment: "HEPA vacuum equipment" shall mean vacuuming equipment with a HEPA filter.

55. Holding Area: Chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.

56. Homogeneous Work Area: Portion of the Work Area that contains one type of ACM and/or where one type of abatement is used.

57. Industrial Hygiene: Science and art devoted to the recognition, evaluation, and control of those environmental factors or stresses, arising in or from the work place, which may cause sickness, impaired health and well being, or significant discomfort and inefficiency among worker or among the citizens of the community.

58. Industrial Hygienist: Individual having a college or university degree or degrees in Engineering, Chemistry, Physics or Medicine, or related Biological Sciences who, by virtue of special studies and training, has acquired competence in industrial hygiene. Such special studies and training must have been sufficient in all of the above cognate sciences to provide the abilities:

    a. To recognize the environmental factors and to understand their effect on people and their well being; and

b. To evaluate, on the basis of experience and with the aid of quantitative measurement techniques, the magnitude of these stresses in terms of ability to impair people's health and well being; and

c. To prescribe methods to eliminate, control, or reduce such stresses when necessary to alleviate their efforts.

59. Isolation Barrier: The construction of partitions, the placement of solid materials, and the plasticizing of apertures to seal off the work place from surrounding areas and to contain asbestos fibers in the work area.

60. Large Asbestos Project: Asbestos project involving the disturbances (e.g., removal, enclosure, encapsulation) of 260 linear feet or more of ACM or 160 square feet or more of ACM.

61. Log: An official record of all activities that occurred during the project. At a minimum, the log shall identify the building owner, agent, contractor, and workers, and other pertinent information including daily activities, cleanings and waste transfers, names and certificate numbers of asbestos handler supervisors and asbestos handlers; results of inspections of decontamination systems, barriers, and negative pressure ventilation equipment; summary of corrective actions and repairs; work stoppages with reason for stoppage; manometer readings at least twice per work shift; daily checks of emergency and fire exits and any unusual events.

62. Minor Project: A project involving the disturbance (e.g., removal, enclosure, encapsulation, repair) of 25 linear feet or less of asbestos containing material or 10 square feet or less of asbestos containing material.

63. Movable Object: Unit of equipment or furniture in the Work Area that can be removed from the Work Area.

64. Negative Air Pressure Equipment: Portable local exhaust system equipped with HEPA filtration. The system shall be capable of creating a negative pressure differential between the outside and inside of the Work Area.

65. NESHAPS: National Emission Standards for Hazardous Air Pollutants.

66. NFPA: The National Fire Protection Association.

67. NIOSH: National Institute for Occupational Safety and Health.

68. DEP or NYCDEP: New York City Department of Environmental Protection

69. NYSDOL: New York State Department of Labor.

70. NYSDOL ICR 56: "NYSDOL ICR 56" shall mean Part 56 of the Official Compilation of Codes, Rules and Regulations of the State of New York or 12 NYCRR Part 56.

71. NYSDOH: The New York State Department of Health.

72. Obstruction: The blocking of a means of egress with any temporary structure or barrier. A double layer of fire-retardant 6-mil polyethylene sheeting shall not be considered an obstruction when it is prominently marked as an exit with photo luminescent signage or paint and cutting tools (knife, razor) are attached to the work area side of the sheeting for use in the event that the sheeting must be cut to permit egress. A corridor shall not be considered obstructed when there is a clear path measuring at least three (3) feet wide.

73. Occupied Area: Area of the work site where abatement is not taking place and where personnel or occupants normally function or where workers are not required to use personal protective equipment.

74. OSHA: Occupational Safety and Health Administration.

75. Outside air: "Outside air" shall mean the air outside the work place.

76. Person: Individual, partnership, company, corporation, association, firm, organization, governmental agency, administration, or department, or any other group of individuals, or any officer or employee thereof.

77. Personal Air Monitoring: Method used to determine employees' exposure to airborne asbestos fibers. The sample is collected outside the respirator in the worker's breathing zone.

78. Personal Protective Equipment (PPE): Appropriate protective clothing, gloves, eye protection, footwear, and head gear.

79. Phase Contrast Microscopy (PCM): The measurement protocol for the assessment of the fiber content of air. (NIOSH Method 7400).

80. Physician: Person licensed or otherwise authorized under Article 131 Section 65.22 of the New York State Education Law.

81. Plasticize: To cover floors and walls with fire retardant plastic sheeting as herein specified or by using spray plastics as acceptable to the Department.

82. Polarized Light Microscopy (PLM): The measurement protocol for the assessment of the asbestos content of bulk materials. (Interim Method for the Determination of Asbestiform Materials in Bulk Insulation Samples- 40 CFR Part 763, Subpart F, Appendix A as amended on September 1, 1982)

83. Project Designer: A person who holds a valid Project Designer Certificate issued by the New York State Department of Labor.

84. Project Monitor: A person who holds a valid Project Monitor Certificate issued by the New York State Department of Labor.

85. Qualitative Fit Test: Individual test subject's responding (either voluntarily or involuntarily) to a chemical challenge outside the respirator face-piece. Acceptable methods include irritant smoke test, odorous vapor test, and taste test.

86. Quantitative Fit Test: Exposing the respiratory wearer to a test atmosphere containing an easily detectable, nontoxic aerosol, vapor or gas as the test agent. Instrumentation, which samples the test atmosphere and the air inside the face-piece of the respirator, is used to measure quantitatively the leakage into the respirator. There are a number of test atmospheres, test agents, and exercises to perform during the test.

87. Registered Design Professional: A person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York.

88. Removal: Stripping of any asbestos- containing materials from surfaces or components of a facility or taking out structural components in accordance with 40 CFR 61 Subparts A and M.

89. Renovation: An addition or alteration or change or modification of a building or the service equipment thereof, that is not classified as an ordinary repair as defined in §27-125 of the Administrative Code of the City of New York.

90. Repair: Corrective action using specified work practices (e.g., glovebag, plastic tent procedures, etc.) to minimize the likelihood of fiber release from minimally damaged areas of ACM.

91. Replacement material: Any material used to replace ACM that contains less than .01 percent asbestos.

92. Shift: A worker's, or simultaneous group of workers', complete daily term of work.

93. Shower Room: Room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold running water controllable at the tap and arranged for complete showering during decontamination.

94. Small Asbestos Project: Asbestos project involving the disturbance (e.g., removal, enclosure, encapsulation) of more than 25 and less than 260 linear feet of ACM or more than ten and less than 160 square feet of ACM.

95. Staging Area: Work Area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the Work Area.

96. Strip: To remove asbestos materials from any part of the facility.

97. Structural Member: Load-supporting member of a facility, such as beams and load-supporting walls, or any non-load-supporting member, such as ceiling and non-load-supporting walls.

98. Surface barriers: The plasticizing of walls, floors, and fixed objects within the work area to prevent contamination from subsequent work.

99. Surfactant: Chemical wetting agent added to water to improve penetration.

100. Transmission Electron Microscopy (TEM): The measurement protocol for the assessment of the asbestos fiber content of air. Interim Transmission Electron Microscopy Analytical Methods-40 CFR Part 763, Subpart E, Appendix A.

101. Visible Emissions: Emissions containing particulate material that are visually detectable without the aid of instruments.

102. Washroom: Room between the Work Area and the holding area in the equipment decontamination enclosure system where equipment and waste containers are wet cleaned and/or HEPA-vacuumed prior to disposal.

103. Waste decontamination enclosure system: "Waste decontamination enclosure system" shall mean the decontamination enclosure system designated for the controlled transfer of materials and equipment, consisting of a washroom and a holding area.

104. Wet Cleaning: "Wet cleaning" shall mean the removal of asbestos fibers from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water.

105. Wet methods: "Wet methods" shall mean the use of amended water or removal encapsulants to minimize the generation of fibers during ACM disturbance.

106. Work Area: Designated rooms, spaces, or areas of the building or structure where asbestos abatement activities take(s) place.

107. Worker Decontamination Enclosure System: Portion of a decontamination enclosure system designed for controlled passage of workers and authorized visitors, consisting of a clean room, a shower room, and an equipment room separated from each other and from the Work Area by airlocks and curtained doorways.

108. Work Place: The work area and the decontamination enclosure system(s).

109. Work Place Safety Plan: Construction documents prepared by a registered design professional and submitted for review by DEP in order to obtain an asbestos abatement permit. Such plan shall include, but not be limited to, plans, sections, and details of the work area clearly showing the extent, sequence, and means and methods by which the work is to be performed.

110. Work Site: Premises where abatement activity is being performed. May be composed of one or more Work Areas.

1.06 STANDARD OPERATING PROCEDURES

A. Develop and implement a written standard procedure for abatement work to ensure maximum protection and safeguard from asbestos exposure of the workers, visitors, employees, public, and environment.

B. TELEPHONE PAGING DEVICE

The Contractor or his authorized representative shall, at all times during the normal workday or during periods of overtime work under this Contract, carry a digital telephone paging device ("Beeper") and/or cellular telephones which can be activated by a telephone number in the 212 or 646 or 718 or 917 or 929 area code. He shall supply the Department of Design and Construction with the activation number for the device and he is liable to respond back to the calls from DDC within the next one (1) hour period after he receives calls from DDC. The cost to the contractor for this device and all charges accruing thereto is deemed included in the Bid.

C. The standard operating procedure shall ensure:

1. Tight security from unauthorized entry into the workspace.

2. Restriction of Contractor's personnel to the immediate Work Area and access/egress routes.

3. Donning of proper protective clothing and respiratory protection prior to entering the Work Area.

4. Safe work practices in the work place, including provisions for inter-room communications, exclusion of eating, drinking, smoking, or in any way breaking the respiratory protection.

5. Proper exit practices from the work space to the outside through the showering and decontamination facilities.

6. Removing asbestos in a way that minimizes release of fibers.

7. Packing, labeling, loading, transporting, and disposing of contaminated material in a way that minimizes exposure and contamination.

8. Emergency evacuation procedures, for medical or safety situations, to minimize the potential exposure to airborne asbestos fibers for emergency personnel, building occupants, and building environment.

9. Safety from accidents in the workspace, especially from electrical shocks, fall hazards associated with scaffolding, slippery surfaces, and entanglements in loose hoses and equipment.

10. Provisions for effective supervision, air monitoring and personnel monitoring for exposure during the work.

11. Engineering controls that minimize exposure to fibers within the workspace.

12. The contractor shall provide a 24-hour fire watch throughout the entire term of the project, to protect against fire and unauthorized entry into the workspace. Fire watch shall be performed by an individual who is a certified asbestos worker capable of entering the Work Area for regular inspections.

D. Provide an Asbestos Handler Supervisor to provide continuous supervision of all work, and to be responsible for the following:

1. Ensure that individuals are using proper personal protective equipment and are trained in its use.

2. Maintain entry log records and ensure that they are recorded in accordance with the provisions of Title 15, Chapter 1 of RCNY.

3. Surveillance of the Work Areas at a minimum of once per work shift or as required by Title 15, Chapter 1 of RCNY, to ensure that the workers personal protective equipment is not torn or ripped and that respiratory protection is worn at all times.

4. Ensure that sufficient personal protective equipment is stored in the clean room.

5. Take precautions to prevent heat stress. Precautions include, but are not limited to, selecting lightweight protective clothing, reducing the work rate, and providing adequate fluid breaks.

6. Perform work area inspection with project monitor prior to the commencement of final clearance air monitoring.

7. The contractor shall retain the asbestos handler supervisor to perform a visual inspection prior to the post-abatement clearance air monitoring to confirm that all containerized waste has been removed from work and holding areas and there is no visible ACM debris or residue on or about all abated surfaces.

E. ENGINEERING CONTROLS

1. The 8-hour time weighted average airborne concentration of fibers to which any passerby may be exposed shall not exceed 0.01 fibers per cubic centimeter of air when fibers have a physical dimension longer than 5 micrometers as determined by the method prescribed in these Specifications.

2. All asbestos projects shall utilize negative pressure ventilation equipment.

   a. The Contractor shall use a manometer to document the pressure differential. The Contractor shall install and make the manometer operational once the negative pressure has been established in the work area. Magnahelic manometers shall be calibrated at least every six months and a copy of the current calibration certification shall be available at the work site.

3. Negative pressure ventilation equipment shall be installed and operated to provide at least one air change in the work area every 15 minutes. Where there are no floor or wall barriers because floor or wall material is being abated, there shall be at least one air change in the work area every ten minutes.

4. The negative pressure ventilation equipment shall operate continuously, 24 hours a day, from the establishment of isolation barriers through successful clearance air monitoring. If such equipment shuts off, adjacent areas shall be monitored for asbestos fibers.

5. A static negative air pressure of 0.02 inches (minimum) water column shall be maintained at all times in the work place during abatement to ensure that contaminated air in the Work Area does not filter back to uncontaminated areas.

6. If the contaminated area of an asbestos project covers the entire floor of the affected building, or an area greater than 15,000 square feet on any given

floor, the installation of a negative air cut off switch or switches shall be required at a single location outside the work place, such as inside a stairwell, or at a secured location in the ground floor lobby when conditions warrant. The required switch or switches shall be installed by a licensed electrician pursuant to a permit issued by the Department of Buildings. If negative pressure ventilation equipment is used on multiple floors, the cut off switch shall be able to turn off the equipment on all floors.

7. On loss of negative pressure or electric power to the negative pressure ventilating units, abatement shall stop immediately and shall not resume until power is restored and negative pressure ventilation equipment is operating again.

8. Negative pressure ventilation equipment shall be exhausted to the outside of the building away from occupied areas.

   a. All openings (including but not limited to operable windows, doors, vents, air intakes or exhausts of any mechanical devices) less than 15 feet from the exterior exhaust duct termination location shall be plasticized with two layers of fire retardant 6-mil polyethylene sheeting, or a second negative pressure ventilation unit with the primary unit's capacity shall be connected in series prior to exhausting to the outside.

   b. Negative pressure ventilation equipment shall exhaust away from areas accessible to the public.

   c. All ducting shall be sealed and braced or supported to maintain airtight joints. Ducts shall be reinforced and shall be installed so as to prevent breakage. Damage to ducts must be repaired immediately.

9. Where ducting to the outside is not possible, a second negative pressure ventilation unit compatible with the primary unit's capacity shall be connected in series. The area receiving the exhaust shall have sufficient, non-recycling exhaust capacity to the outside of the structure.

10. In the event that there is a failure of the containment system or a breach in the Isolation Barriers, all abatement work will cease and the Contractor will immediately correct the condition. Abatement work will not resume until the Work Area has been smoke tested by the third party laboratory and approved by the Construction Project Manager.

F. LOCKDOWN ENCAPSULATION PROCEDURES

1. The following procedures shall be followed to seal in non-visible residue while conducting lockdown encapsulation on all surfaces from which ACM has not been removed:

a. Only encapsulants rated as acceptable or marginally acceptable on the basis of Battelle Columbus Laboratory test procedures and rating requirements developed under the 1978 USEPA Contract shall be used for lockdown encapsulation.

b. The encapsulant solvent or vehicle shall not contain a volatile hydrocarbon unless reviewed and approved by DEP.

c. Latex paint with solids content greater than 15 percent shall be considered a lockdown sealant for coating all non-metallic surfaces.

d. Encapsulants shall be applied using airless spray equipment. Spraying is to occur at the lowest pressure range possible to minimize fiber release from encapsulant impact at the surface. It shall be applied with a consistent horizontal or vertical motion.

e. The cleaned layer of the surface barriers shall be removed from walls and floors.

The isolation barriers shall remain in place throughout cleanup. Decontamination enclosure systems shall remain in place and be utilized. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

1.07 NOTIFICATIONS, PERMITS, WARNING SIGNS, LABELS, AND POSTERS

A. The Contractor shall submit an Asbestos Project Notification (ACP-7) to the NYCDEP listing each work area within the building separately one week in advance of the start of work.

B. The Contractor shall obtain an asbestos abatement permit authorizing the performance of construction work as required for asbestos projects involving one or more of the following activities:

1. Obstruction of an exit door leading to an exit stair or the exterior of the building;

2. Obstruction of an exterior fire escape or access to that fire escape;

3. Obstruction of a fire-rated corridor leading to an exit door;

4. Removal of handrails in an exit stair or ramp;

5. Removal or dismantling of any fire alarm system component including any fire alarm-initiating device (e.g., smoke detectors, manual pull station);

6. Removal or dismantling of any exit sign or any component of the exit lighting system, including photo luminescent exit path markings;

7. Removal or dismantling of any part of a sprinkler system including piping or sprinkler heads;

8. Removal or dismantling of any part of a standpipe system including fire pumps or valves;

9. Removal of any non-load bearing / non-fire-rated wall (greater than 45 square feet or 50 percent of a given wall);

10. Any plumbing work other than the repair or replacement of plumbing fixtures;

11. Removal of any fire-resistance rated portions of a wall, ceiling, floor, door, corridor, partition, or structural element enclosure including spray-on fire resistance rated materials;

12. Removal of any fire damper, smoke damper, fire stopping material, fire blocking, or draft stopping within fire-resistance rated assemblies or within concealed spaces;

13. Any work that otherwise requires a permit from the DOB (full demolitions, alterations, renovations, modifications or plumbing work).

C. The Contractor shall provide a floor plan showing the areas of the building under abatement and the location of all fire exits in said areas. It shall be prominently posted in the building lobby or comparable location, along with a notice stating the location within the building of the negative air cutoff switch, if applicable.

D. The Contractor shall submit, as required, an asbestos abatement permit due to one or more of the activities listed in 1.07 (B) (1-8) and (B) (13). The contractor is responsible for submitting, with an asbestos project notification, a work place safety plan (WPSP) and any other applicable construction documents. These documents must be prepared by a registered design professional (Professional Engineer or Registered Architect).

E. A WPSP is not required for projects requiring an asbestos abatement permit due to one or more of the activities listed in 1.07 (B) (9-12). The Contractor shall submit, together with the asbestos project notification, all applicable asbestos abatement permit construction documents.

F. The General Contractor shall retain a Registered Design Professional to perform the inspections required pursuant to Title 28 of the Administrative Code, including but not limited to special inspections required by Chapter 17 of the Building Code, as follows:

1. A final inspection shall be performed by a registered design professional retained by the Contractor after all work authorized by the asbestos abatement permit is completed. The person performing the inspection shall note all failures to comply with the provisions of the Building Code or approved asbestos abatement permit and shall promptly notify the owner in writing. All defects noted in such inspection shall be corrected. The final inspection report shall either:

   a. Confirm:

      (1) That the construction work is complete, including the reinstallation or reactivation of any building fire safety or life safety component.

      (2) That any defects previously noted have been corrected.

      (3) That all required inspections were performed.

      (4) That the work is in substantial compliance with the approved asbestos abatement permit construction documents, the Building Code, and other applicable laws and rules.

   b. Confirm:

      (1) That the construction work does not return the building (or portion thereof) affected by the abatement project to a condition compliant with the building code and other applicable laws and rules, but that the registered design professional has reviewed an application for asbestos abatement permit construction documents approval that has been approved by the department of buildings, and the subsequent scope of work as approved will, upon completion, render all areas affected by the asbestos project in full compliance with the building code and all applicable laws and rules.

      (2) That any defects previously noted that are not addressed by the subsequent scope of work as approved by the department of buildings, have been corrected.

(3) That all required inspections that are not addressed by the subsequent scope of work as approved by the department of buildings were performed.

(4) That all completed work pursuant to an asbestos abatement permit is in substantial compliance with the approved asbestos abatement permit construction documents.

G. The contractor shall provide the final inspection reports to be filed with DEP on A-TR1 form. Records of final inspections made by registered design professionals shall be submitted to DDC as part of the close out document package.

H. Erect bilingual (English-Spanish) warning signs around the work space and at every point of potential entry from the outside and at main entrance to building which can be viewed by the public without obstruction, in accordance with OSHA 29 CFR 1926.1101 (K) (Sign Specifications) and Title 15, Chapter 1 of RCNY. The warning signs shall be a bright color so that they will be easily noticeable. The size of the sign and the size of the lettering shall be no less than OSHA requirements.

I. Provide the required labels for all polyethylene bags and all drums utilized to transport contaminated material to the landfill in accordance with OSHA 29 CFR 1926.1101 (K)(2) and by 49 CFR Parts 171 and 172 of the Department of Transportation regulations.

J. Provide any other signs, labels, warnings, and posted instructions that are necessary to protect, inform and warn people of the hazard from asbestos exposure. Post in a prominent and convenient place for the workers a copy of the latest applicable regulations from OSHA, EPA, NIOSH, State of New York and New York City and any additional items mandated for posting by the aforementioned regulations.

K. Furnish all permits, variances and notices required to perform the Work.

1.08 EMERGENCY PRECAUTIONS

A. Establish emergency and fire exits from the Work Area. The clean side of all emergency exits shall be equipped with two full sets of protective clothing and respirators at all times.

B. Notify local medical emergency personnel, both ambulance crews and hospital emergency room staff prior to commencement of abatement operations as to the possibility of having to handle contaminated or injured workmen, and shall be advised on safe decontamination.

C. Prepare to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated immediately

for decontamination. When an injury occurs, precautions shall be taken to reduce airborne fiber concentrations (i.e., misting of the air with water) until the injured person has been removed from the Work Area.

D. Notify, before actual removal of the asbestos material, the local police and fire departments to the danger of entering the Work Area. Contractor shall make every effort to help these agencies form plans of action should their personnel need to enter the contaminated area.

1.09 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 Contractor shall present three copies of the following items, bound and indexed. The detailed plan of action must be submitted at least five (5) days prior to the pre-construction meeting.

   a. 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 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. 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.

(4) A schedule of equipment to be used including numbers and types of all major equipment such as HEPA Air Filtration Units, HEPA-vacuums, airless sprayers, Water Atomizing Devices and Type "C" compressors.

e. A written plan and shop drawings for preparation of work site and decontamination chamber.

f. Description of protective clothing and approved respirator to be used, make, model, NIOSH approval numbers.

g. Delineation of responsibility of work site supervision, including competent person, with names, resumes, and home telephone numbers.

h. Explanation of decontamination sequence and isolation techniques.

i. Description of specific equipment to be utilized, including make and model number of air filtration devices, vacuums, sprayers, etc.

j. Description of any prepared methods, procedures, techniques, or equipment other than those specified in the Contract Documents.

k. Explanation of the handling of asbestos contaminated wastes including EPA and NYCDEP identification numbers of Waste Hauler.

l. Description of the final clean-up procedures to be used.

m. Name and qualifications of Contractor's Third-Party Air Monitor including AIHA accreditation, and proof of NIOSH PAT and NIST/NVLAP Bulk Quality Assurance Proficiency of OSHA samples for approval by the City of New York Department of Design and Construction.

n. 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) 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.

o. 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.

p. Worker Training and Medical Surveillance: Contractor shall submit a list of the persons who will be employed by him and his Subcontractors in 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.

q. Logs: Specimen copies of daily progress log, visitor's log, and disposal log.

(1) The 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 Environmental Control Representative; name, address and phone number of Abatement Contractor; name, address and phone number of Contractor and City's air testing entity; emergency numbers including, but not limited to local Fire/Rescue Department. Log book shall contain a list of personnel approved by the laboratory 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 Contractor shall submit the logbook containing a day-to-day record of personnel log entries countersigned by the Construction Project Manager every day.

r. 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. Submit copies of the following items to the Construction Project Manager during the work:

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 Contractor's current work progress shall be submitted for review by the Construction Project Manager at weekly progress meetings.

4. All Contractors' air monitoring and inspection results.

C. Project Closeout Submittals:

Upon completion of the project and as a condition of acceptance, the Contractor shall present two copies of the following items, bound and indexed:

1. Lien Waivers from Contractor, Sub-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 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 contractors involved in the project;

   b. Copies of DEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;

c. Copies of all project notifications and reports filed with DEP and NYSDOL 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 contractor's daily log book;

g. All data related to bulk sampling including the results of any asbestos surveys performed by an asbestos investigator;

h. Copies of all asbestos waste manifests;

i. A copy of all Project Monitor's Reports (ACP-15).

j. A copy of each ATR-1 Form completed for the asbestos project (if required).

k. A copy of each Asbestos Project Conditional Closeout Report (ACP-20).

l. A copy of the Asbestos Project Completion Form (ACP-21).

9. The Contractor shall submit one of the following certifications to the DOB, with a copy provided to DDC:

a. Asbestos Project Completion Form. If an asbestos project has been performed, a copy of the asbestos project completion form issued by DEP shall be submitted to DOB, with a copy being provided to DDC, prior to the issuance of a DOB permit and to any amendment of the underlying construction document approval which increases the scope of the project to include (a) work area(s) not previously covered.

b. An Asbestos Project Conditional Close-out Form. If an asbestos project has been performed a copy of the asbestos project conditional close-out form issued by DEP shall be submitted to DOB, with a copy being provided to DDC, prior to the issuance of a DOB permit and to any amendment of the underlying construction document approval which increases the scope of the project to include (a) work area(s) not previously covered.

1.10 QUALITY ASSURANCE

A. All work required for the completion of this project or called for in this Specification must be executed in a workmanlike manner by using the appropriate methods established by regulatory requirements and/or industrial standards. All workmanship or work methods are subject to review and acceptance by the Construction Project Manager. Throughout the Specification, reference is made to codes and standards which establish qualities, levels or types of workmanship which will be considered acceptable. It is the Abatement Contractor's responsibility to comply with these codes and standards during the execution of this work.

B. All materials and equipment required or consumed during the work of this Contract must meet the minimum acceptable criteria established by codes and standards referenced elsewhere in this Specification. Materials and equipment must be submitted for prior approval as part of the Contractor's "Shop Drawings".

C. It is the Abatement Contractor's responsibility, when so required by the Specification or upon written request from the Commissioner or his representative to furnish all required proof that workmanship, materials and/or equipment meet or exceed the codes and standards referenced. Such proof shall be in the form requested, typically a certified report or test conducted by a testing entity approved for that purpose by DDC.

D. The Contractor shall furnish proof that employees working under his supervision have had instruction on the dangers of asbestos exposure, on respirator use, decontamination, and OSHA regulations. This proof shall be in the form of a notarized affidavit to the effect that the above requirements have been satisfied.

E. The Contractor will have at all times in his possession and in view at the job site the OSHA regulations 29 CFR 1910.1001, and 1926.1101 Asbestos, and Environmental Protection Agency 40 CFR, Part 61, subpart B: National Emission Standard for asbestos, asbestos stripping, work practices and disposal of asbestos waste. He shall also have one copy of NYC Title 15, Chapter 1 of RCNY and NYS DOL ICR 56 at the job site at all times.

F. Familiarity with Pertinent Codes and Standards: In procuring all items used in this work, it is the Contractor's responsibility to verify the detailed requirements of the specifically named codes and standards and to verify that the items procured for use in this work meet or exceed the specified requirements, and are suitable for their intended use.

G. Rejection of Non Complying Items: The Commissioner reserves the right to reject items incorporated into the work that fail to meet the specified minimum requirements. The Commissioner further reserves the right, and without prejudice to other recourse that maybe taken, to accept non-complying items subject to an adjustment in the Contract amount as approved by the City.

H. Applicable Regulations, Codes and Standards: Applicable standards listed in these Specifications include, but are not necessarily limited to, standards promulgated by the following agencies and organizations:

1. American National Standards Institute (ANSI)
(Successor to USASI and ASA)
25 West 43rd Street (between 5th and 6th Avenue) 4th Floor
New York, NY 10036
212-642-4900

2. American Society for Testing and Materials (ASTM)
100 Bar Harbor Drive
West Conshohocken, PA 19428-2959
610-832-9500

3. National Institute for Occupational Safety and Health (NIOSH)
Robert A. Taft Laboratory
4676 Columbia Pkwy
Mailstop R12 Cincinnati, Ohio 45226
513-841-4428

4. National Electrical Code (NEC)
See NFPA

5. National Fire Protection Association (NFPA)
1 Batterymarch Park
Quincy, Massachusetts 02169-7471
617-770-3000

6. New York City Fire Department (FDNY)
9 Metrotech Center
Brooklyn, NY 11201-5431
718-999-2117

7. New York City Department of Buildings (NYC DOB)
Enforcement Division
280 Broadway, New York, New York 10007
212- 566-2850

8. New York City Department of Environmental Protection (NYCDEP)
Bureau of Environmental Compliance
Asbestos Control Program
59-17 Junction Boulevard, 8th Floor
Corona, New York 11368
718-595-3682

9. New York City Department of Health and Mental Hygiene (NYC DOHMH)
Environmental Investigation
125 Worth Street
New York, New York 10013
212-442-3372

10. New York State Department of Labor (NYSDOL)
Division of Safety and Health
Engineering Services Unit
State Office Building Campus
Albany, New York 12240-0010

11. New York City Department of Sanitation
125 Worth Street, Room 714
New York, New York 10013
212-566-1066

12. Occupational Safety and Health Administration (OSHA)
Region II - Regional Office
201Varick Street, Room 908
New York, New York 10014
212-337-2378

13. United States Environmental Protection Agency (EPA or USEPA)
Region II
Asbestos NESHAPS Contact
Air and Waste Management Division
(Air Compliance Branch) – USEPA
290 Broadway, 21st Floor
New York, New York 10007-1866
212-637-3660

I. Post all applicable regulations in a conspicuous place at the job site. Assure that the regulations are not altered, defaced or covered by other materials. One copy of each regulation must also be kept at the Contractor's office.

1.11 CITY/CONTRACTOR RESPONSIBILITIES

A. The normal occupants of the Work Areas will be relocated by the City prior to the performance of the abatement work and returned there to at the conclusion of the abatement work, at no cost to the Contractor. However, the Contractor shall protect all furniture and equipment in the Work Areas in a manner as hereinafter specified. In addition, the Contractor shall perform the work of this Contract in a manner that will be least disruptive to the normal use of the non-Work Areas in the building.

B. Contractor shall be responsible for cleaning all portable items not specifically addressed by the Facility, in the Work Areas, or dispose of same as asbestos contaminated waste.

C. Facility to provide Contractor with a list of items that cannot be removed and need special attention.

D. Facility to stop all deliveries that may be scheduled to the Work Area while work is in progress.

E. Facilities to have authorized personnel on site at all times or supply the Contractor with means of contacting such personnel without unreasonable delay. Such personnel shall have access to all areas, have knowledge of electrical, and air handling equipment. Such personnel shall assist the Contractor in case of any power failure or breakdown to shut down air supply systems, to reset and control all protective systems such as alarms, sprinklers, locks, etc. The Facility shall ensure no active air handling systems are operating within the Work Area.

F. City will not occupy the portions of the building, in which work is being performed during the entire asbestos removal operation, including completion of clean up.

G. Contractor shall provide a plan for 24 hour job security both for prevention of theft and for barring entry of curious but unprotected personnel into Work Areas.

H. Contractor shall provide surveillance by a fire watch and set forth procedures to be taken for the safety of building occupants in the event of an emergency, in accordance with the WPSP.

I. Should the failure of any utility occur, the City will not be responsible to the Contractor for loss of time or any other expense incurred.

J. Facility will be responsible to notify the Contractor of any planned electrical power shutdowns in order to ensure that there are no power interruptions in the negative air pressure systems.

K. Contractor shall remove all flammable materials from the work area and all sources of ignition (including but not limited to pilot lights) shall be extinguished.

L. Contractor shall require a competent person (as defined in OSHA 1926.1101) to perform the following functions and to be on-site continuously for the duration of the project:

1. Monitor the set up of the Work Area enclosure and ensure its integrity.

2. Control entry and exit into the work enclosure.

3. Ensure that employees are adequately trained in the use of engineering controls, proper work practices, proper personal protective equipment and in decontamination procedures.

4. Insure that employees use proper engineering controls, proper work practices, proper personal protective equipment and proper decontamination procedures.

5. The competent person (as defined in OSHA1926.1101) shall check for rips and tears in work suits, and ensure that they are mended immediately or replaced.

1.12 USE OF BUILDING FACILITIES

A. City shall make available to the Contractor, from existing outlets and supplies, all reasonably required amounts of water and electric power at no charge.

B. Electric power to all Work Areas shall be shut down and locked out except for electrical equipment that must remain in service. Safe temporary power and lighting shall be provided by Contractor in accordance with applicable codes. All power to Work Areas shall be brought in from outside the area through ground-fault interrupter circuits installed at the source. Stationary electrical equipment within the Work Area, which must remain in service, shall be adequately protected, enclosed and ventilated. The Facility will identify all electric lines that must remain in service. Contractor shall protect all lines.

C. Contractor shall provide, at his own expense, all electrical, water, and waste connections, tie-ins, extensions, and construction materials, supplies, etc. All water tie-ins shall be hard piped with polyethylene or copper piping. At the end of each shift, Contractor shall disconnect all hoses within the work zone and place in equipment room of the worker decontamination unit. Contractor shall ensure positive shutoff of all water to Work Area during non-working hours.

D. Utilities:

1. General:
   All temporary facilities required to be installed, shall be subject to the approval of the Commissioner. Prior to starting the work at any site; specify clearly the temporary locations of facilities preferably with sketches and submit the same to the Construction Project Manager for approval.

2. Water:
   The Department of Design and Construction will furnish all water needed for construction, at no cost to the Contractor in buildings under their jurisdiction. All temporary plumbing or adaptations to supply the needs of the Work Area shall be installed and removed by the Contractor and the cost thereof included in the Lump Sum price Bid for abatement work. Shower

water for the decontamination unit shall be provided hot. Heating of water, if necessary, shall be provided by the Contractor.

3. Electricity:
The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the Contractor in buildings under their jurisdiction. All temporary electrical work or adaptations to supply the needs of the Work Area shall be installed and removed by the Contractor and the cost thereof included in the Lump Sum price Bid for abatement work.

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 Contractor. However, it is the 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.

A dedicated power supply for the negative pressure ventilating units shall be utilized. The negative air equipment shall be on a ground fault circuit interrupter (GFCI) protected circuit separate from the remainder of the work area temporary power circuits.

E. Contractor shall shut down and lock out all electric power to all work areas except for electrical equipment that must remain in service. Safe temporary power and lighting shall be provided in accordance with all applicable codes. Existing light sources (e.g., house lights) shall not be utilized. All power to work areas shall be brought in from outside the area through ground-fault circuit interrupter at the source.

1. If electrical circuits, machinery, and other electrical systems in or passing though the work area must stay in operation due to health and safety requirements, the following precautions must be taken:

a. All unprotected cables, except low-voltage (less than 24 volts) communication and control system cables, panel boxes of cables and joints in live conduit that run through the work area shall be covered with three (3) independent layers of six (6) mil fire retardant polyethylene. Each layer shall be individually duct taped and sealed. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air sampling results have been obtained.

b. Any energized circuits remaining in the work area shall be posted with a minimum two (2) inch high lettering warning sign which reads: DANGER LIVE ELECTRICAL - KEEP CLEAR. A sign shall be placed on all live covered barriers at a maximum of ten (10) foot

intervals. These signs shall be posted in sufficient numbers to warn all persons authorized to enter the work area of the existence of the energized circuits.

2. Any source of emergency lighting which is temporarily blocked as a result of work place preparation shall be replaced for the duration of the project by battery operated or temporary exit signs, exit lights, or photo luminescent path markings.

F. Contractor shall provide a separate temporary electric panel board to power Contractor's equipment. The Facility will designate an existing electrical source in proximity to the Work Area. Contractor's licensed electrician shall provide temporary tie-in via cable, outlet boxes, junction boxes, receptacles and lights, all with ground fault interruption. At no time shall extension cords greater than 50-feet in length be allowed. All temporary electrical installation shall be in accordance with OSHA regulations. The electric shut down for power panel tie-in will be on off-hours and must be coordinated with the Facility. Contractor shall provide to the City a specification and drawing outlining his power requirements at the pre-construction meeting.

G. Additional electrical equipment (i.e., transformers, etc.), which is necessary due to the lack of existing power on the floor, shall be at the Contractor's expense.

H. Contractor shall provide fire protection in accordance with all State and Local fire codes.

I. Sprinklers, standpipes, and other fire suppression systems shall remain in service and shall not be plasticized.

J. When temporary service lines are no longer required, they shall be removed by the Contractor. Any parts of the permanent service lines, grounds and buildings, disturbed or damaged by the installation and/or removal of the temporary service lines, shall be restored to their original condition by the Contractor. Senior Stationary Engineer will inspect and test all switches, controls, gauges, etc. and shall submit a list to the Construction Project Manager of any equipment damaged by the Contractor.

K. Contractor shall supply hot shower water necessary for use in the decontamination unit.

1.13 USE OF THE PREMISES

A. Contractor shall confine his apparatus, the storage of materials, and supplies, and the operation of his workmen to limits established by law, ordinances, and the directions of the Construction Project Manager and the Facility. All flammable or combustible materials shall be properly stored to obviate fire and in areas approved by the Facility.

B. Contractor shall assure that no exits from the building are obstructed, that appropriate safety barriers are established to prevent access, and that Work Areas are kept neat, clean, and safe.

C. Contractor shall maintain exits from the work area or alternative exits shall be established, in accordance with section 1027 of the New York City Fire Code. Exits shall be checked at the beginning and end of each work shift against blockage or impediments to exiting.

D. If the openings of temporary structural partitions related to abatement work areas block egress, the partition shall consist of two sheets of fire retardant 6-mil plastic, prominently marked as an exit with photo luminescent paint or signage. Cutting tools (e.g., knife, razor) shall be attached to the work area side of the sheeting for use in the event that the barrier must be cut open to allow egress.

E. All surrounding work, fixtures, soil lines, drains, water lines, gas pipes, electrical conduit, wires, utilities, duct work railings, shrubbery, landscaping, etc. which are to remain in place shall be carefully protected and, if disturbed or damaged, shall be repaired or replaced as directed by the City, at no additional cost.

F. All routes through the building to be used by the Contractor shall first be approved by the Construction Project Manager and the Facility.

G. Attention is specifically drawn to the fact that other Contractors, performing the work of other Contracts, may be (or are) brought upon any of the work sites of this Contract. Therefore, the 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 on (or are on) any site of the work of this Contract. Regulated area exempted.

H. Temporary toilet facilities must be provided by the Contractor on the site. Coordinate location of facilities with Construction Project Manager. No toilet facilities will be allowed in the Work Area.

1.14 PROTECTION AND DAMAGE

A. The Contractor is responsible to cover all furniture and equipment that cannot be removed from Work Areas. Moveable furniture and equipment will be removed from Work Areas by Contractor prior to start of work and returned upon successful completion of the final air testing. At the conclusion of the work (after clearance level of air testing reaches the acceptable limit), the Contractor will remove all plastic covering from the walls, floors, furniture, equipment and reinstall furniture and equipment in the cleaned Work Area. The Contractor shall remove all shades, curtains and drapes from the Work Area, and reinstall the same following the final clean up.

B. Prior to plasticizing, the proposed work areas shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning methods. Methods that raise dust, such as sweeping or vacuuming with equipment not equipped with HEPA filters, are prohibited.

C. Use rubber tired vehicles that use non-volatile fuels for conveying material inside building and provide temporary covering, as necessary, to protect floors.

D. No materials or debris shall be thrown from windows or doors of the building. Building waste system shall NOT be used to remove refuse.

E. Debris shall be removed from the work site daily. Premises shall be left neat and clean after each work shift, so that work may proceed the next regular workday without interruption. Limited bag storage may take place within the Work Area when approved by the Construction Project Manager.

F. Protect floors and walls along removal routes from damage, wear and staining with contamination control flooring. All finished surfaces to be protected with Masonite or other rigid sheathing material.

G. A preliminary inspection for pre-existing damage shall be conducted by Contractor and representative of the City before commencement of the project.

1.15 RESPIRATORY PROTECTION REQUIREMENTS

A. Respiratory protection shall be worn by all individuals who may be exposed to asbestos fibers from the initiation of the asbestos project until all areas have successfully passed clearance air monitoring in accordance with Regulations and these Specifications.

B. Contractor shall develop and implement a written respiratory protection program with required site-specific procedures and elements. The program shall be administered by a properly trained individual. The written respiratory protection program shall include the requirements set forth in OSHA Standard 29 CFR 1910.134, at a minimum.

C. The Contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the Work Area(s), as specified in OSHA Standards 26 CFR 1910.134 and 29 CFR 1926.1101, NIOSH Standard 42 CFR 84, or as more stringently specified otherwise, herein.

D. Where respirators with disposable filter parts are employed, the Contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.

E. All respiratory protection shall be NIOSH approved. All respiratory protection shall be provided by Contractor, and used by workers in conjunction with the written respiratory protection program.

F. Contractor shall provide respirators selected by an Industrial Hygienist that meet the following requirements:

Table 1. -- Assigned Protection Factors

Type of Respirator	Half mask	Full facepiece	Helmet/hood
1. Air-Purifying Respirator	[3]10	50	.....
2. Powered Air-Purifying Respirator (PAPR)	50	1,000	[4]25/1,000
3. Supplied-Air Respirator (SAR) or Airline Respirator			
• Demand mode	10	50	.....
• Continuous flow mode	50	1,000	[4]25/1,000
• Pressure-demand or other positive-pressure mode	50	1,000	.....
4. Self-Contained Breathing Apparatus (SCBA)			
• Demand mode	10	50	50
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	.....	10,000	10,000

Notes:

[1]Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

[2]The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

[3]This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

[4]The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

[5]These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to

the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

G. Selection of high efficiency filters:

1. All high efficiency filters shall have a nominal efficiency rating of 100 (99.97-percent effective) when tested against 0.3-micrometer monodisperse diethyl-hexyl phthalate (DOP) particles.

2. Choose N-, R-, or P-series filters based upon the presence or absence of oil particles.

   a. N-series filters shall only be used for non-oil solid and water based aerosols or fumes.

   b. R- and P-series filters shall be used when oil aerosols or fumes (i.e., lubricants, cutting fluids, glycerin, etc.) are present. The R-series filters are oil resistant and the P-series filters are oil proof.

   c. Follow filter manufacture recommendations.

3. If a vapor hazard exists, use an organic vapor cartridge in combination with the high efficiency filter.

H. Historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for an abatement task. Historical data provided by the Contractor shall be based on personal air monitoring performed during work operations closely resembling the processes, type of material, control methods, work practices, and environmental conditions present at the site. Documentation of aforementioned results may be requested by the City and/or Third-Party Air Monitor for review. This will not relieve the Contractor from providing personal air monitoring to determine the time-weighted average (TWA) for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101.

I. At no time during actual removal operations shall half-mask air purifying respirators be allowed unless a full 8-hour TWA and excursion limit have been conducted, and reviewed by the Construction Project Manager. If the TWA and excursion limit have not been conducted, a Supplied-Air Respirator (SAR) or Airline Respirator or Self-Contained Breathing Apparatus (SCBA) must be used. Use of single use dust respirators is prohibited for the above respiratory protection.

J. Workers shall be provided with personally issued and individually marked respirators. Respirators shall not be marked with any equipment that will alter the fit of the respirator in any way. Only waterproof identification markers shall be used.

K. Contractor shall ensure that the workers are qualitatively or quantitatively fit tested by an Industrial Hygienist initially and every 12 months thereafter with the type of respirator he/she will be using.

L. Whenever the respirator design permits, workers shall perform the positive and negative air pressure fit test each time a respirator is worn. Powered air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.

M. No facial hairs (beards) shall be permitted to be worn when wearing respiratory protection that requires a mask-to-face seal.

N. If a worker wears glasses, a spectacle kit to fit their respirator shall be provided by the Contractor at the Contractor's expense.

O. Respiratory protection maintenance and decontamination procedures shall meet the following requirements:

1. Respiratory protection shall be inspected and decontaminated on a daily basis in accordance with OSHA 29 CFR 1910.134 (b); and

2. High efficiency filters for negative pressure respirators shall be changed after each shower; and

3. Respiratory protection shall be the last piece of worker protection equipment to be removed. Workers must wear respirators in the shower when going through decontamination procedures as stated in Section 3.03 and/or 3.04.

4. Airline respirators with high efficiency filtered disconnect shall be disconnected in the equipment room and worn into the shower. Powered air-purifying respirator face pieces shall be worn into the shower. Filtered/power pack assemblies shall be decontaminated in accordance with manufacturers recommendations; and

5. Respirators shall be stored in a dry place and in such a manner that the face-piece and exhalation valves are not distorted; and

6. Organic solvents shall not be used for washing of respirators.

P. Authorized visitors shall be provided with suitable respirators and instruction on the proper use of respirators whenever entering the Work Area. Qualitative fit test shall be done to ensure proper fit of respirator.

1.16 PROTECTIVE CLOTHING

A. Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work. Provide to all workers, foremen, superintendents, authorized visitors and inspectors, protective disposable clothing consisting of full

body coveralls, head covers, gloves and 18-inch high boot type covers or reusable footwear.

B. In addition to personal protective equipment for workers, the Contractor shall make available at each worksite at least four (4) additional uniforms and required respiratory equipment each day for personnel who are authorized to inspect the work site. He/she shall also provide, for the duration of the work at any site involving a decontamination unit for worksite access, a lockable storage locker for use by the Construction Project Manager. In addition to respiratory masks for workers, the Contractor must have on hand at the beginning of each work day, at least four (4) masks each with two sets of fresh filters, for use by personnel who are authorized to inspect the worksite. The Contractor shall check for proper fit of the respirators of all City personnel authorized to enter the Work Area.

C. Asbestos handlers involved in tent procedures shall wear two (2) disposable suits, including gloves, hood and footwear, and appropriate respiratory equipment. All street clothes shall be removed and stored in a clean room within the work site. The double layer personal protective equipment shall be used for installation of the tent and throughout the procedure, if a decontamination unit (with shower and clean room) is contiguous to the Work Area, only one (1) layer of disposable personal protective equipment shall be required; in this case, prior to exiting the tent the worker shall HEPA vacuum and wet clean the disposable suit.

D. The outer disposable suit (if 2 suits are worn) shall be removed and remain in the tent upon exiting. Following the tent disposal and work site clean up the workers shall immediately proceed to a shower at the work site. The inner disposal unit and respirator shall be removed in the shower after appropriate wetting. The disposal clothing shall be disposed of as asbestos-containing waste material. The workers shall then fully and vigorously shower with supplied liquid bath soap, shampoo, and clean dry towels.

E. Coveralls: provide disposable full-body coveralls and disposable head covers. Require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes for all workers in the Work Area.

F. Boots: provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Provide boots at no cost to workers. Paint uppers of all boots yellow with waterproof enamel. Do not allow boots to be removed from the Work Area for any reason after being contaminated with ACM and/or dust.

G. Hard Hats: provide hard hats as required by OSHA for all workers, and provide a minimum of four spares for Inspectors, visitors, etc. Label all hats with same warning label as used on disposal bags. Require hard hats to be worn at all times that work is in progress that may cause potential head injury. Provide hard hats of the type with polyethylene strap suspension. Require hats to remain in the Work Area throughout the work. Thoroughly clean and decontaminate and bag hard hats prior to removing them from the Work Area at the end of the work.

H. Goggles: provide eye protection (goggles) as required by OSHA for all workers involved in any activity that may potentially cause eye injury. Require them to be worn at all times during these activities. Thoroughly clean and decontaminate goggles before removing them from the Work Area.

I. Gloves: provide work gloves to all workers, of the type dictated by the Work and OSHA Standards. Do not remove gloves from the Work Area. Dispose of as asbestos-asbestos contaminated waste at the end of the work. Gloves shall be worn at all times, except during Work Area Preparation activities that do not disturb ACM.

J. Reusable footwear, hard hats and eye protection devices shall be left in the contaminated Equipment Room until the end of the Asbestos Abatement Work.

K. Disposable protective clothing shall be discarded and disposed of as asbestos waste every time the wearer exits from the workspace to the outside through the decontamination facility.

L. Respirators, disposable coveralls, head covers and foot covers shall be provided by the Contractor for the Facilities Representative, Construction Project Manager and any other authorized representative who may inspect the Work Area. Provide two respirators and six respirator filter changes per day.

1.17 AIR MONITORING - CONTRACTOR

A. Contractor shall employ a qualified industrial hygiene laboratory to analyze air samples in accordance with OSHA Regulations, 1926.1101 (Asbestos Standards for Construction) and New York City regulations. All costs for this work shall be included in the Bid Price.

B. 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).

C. Industrial hygiene laboratory shall also be a current proficient participant in the NIST/NVLAP Quality Assurance Program for the identification of bulk samples. Laboratory identification number shall be submitted to and approved by the City.

D. Air monitoring responsibilities for the contractor's employees, shall be performed by a representative of the industrial hygiene laboratory retained by the Contractor.

E. Contractor shall submit to the City all credentials of the designated (as defined in OSHA 1926.1101) and industrial hygiene laboratory representative for approval.

F. Air monitoring and inspection shall be conducted by the Contractor's competent person (as defined in OSHA 1926.1101).

G. Continuous (daily or per shift) monitoring and inspection will include Work Area samples, personnel samples from the breathing zone of a worker to accurately determine the employees' 8-hour TWA (unless Type C respirators are used) and decontamination unit clean room samples.

H. Work Area samples and employee personnel samples shall be taken using pumps whose flow rates can be determined to an accuracy of +5-percent, at a minimum of two liters per minute. This must be demonstrated at the job site.

I. Sampling and analysis methods shall be per NIOSH 7400A.

J. Test Reports:

1. Promptly process and distribute one copy of the test results, to the Commissioner.

2. Prompt reports are necessary so that if required, modifications to work methods and/or practices may be implemented as soon as possible.

3. Contractor shall by facsimile notify the Commissioner within 24 hours of the results of each test, followed by written notification within three days.

K. Competent person shall conduct inspections and provide written reports daily. Inspections will include checking the standard operating procedures, engineering control systems, respiratory protection and decontamination systems, packaging and disposal of asbestos waste, and any other aspects of the project which may affect the health and safety of the people and environment.

L. All costs for required air monitoring by the Contractor's competent person shall be borne by the Contractor.

M. The City reserves the right to conduct air and surface dust sampling in conjunction with and separate from the Third-Party Air Monitor for the purposes of Quality Assurance.

N. All samples shall be accompanied by a Chain of Custody Record that shall be submitted to the Construction Project Manager upon completion of analysis.

1.18 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). This laboratory shall meet the standards stated in Paragraph 1.17. B.

C. Observations will include, but not be limited to, checking the standard operating procedures, engineering control systems, respiratory protection, decontamination systems, packaging and disposal of asbestos waste, and any other aspects of the project that may affect the health and safety of the environment, Contractor, and/or facility occupants.

D. 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 Contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.

E. 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 Contractor.

F. At a minimum, air sampling shall be conducted in accordance with the following schedule:

Abatement Activity	**Pre-Abatement**	**During Abatement**	**Post-Abatement**
Equal to or greater than 10,000 square feet or 10,000 linear feet of ACM	PCM	PCM	TEM
Less than 10,000 square feet or 10,000 linear feet of ACM	PCM	PCM	PCM

Note: TEM is acceptable wherever PCM is required.

G. The number of air samples required per stage of abatement and size of abatement project is listed in the table below:

		Pre-Abatement	During Abatement	Post Abatement
	Large Asbestos Projects			
1.	Full Containment	10	5	10
2.	Glovebag inside Tent	5[a]	5[a]	5[a]
3.	Exterior Foam and Vertical Surfaces	-	5[c]	5[d]
4.	Interior Foam	10	5[c]	10[d]
	Small Asbestos Projects			
1.	Full Containment	6	3	6
2.	Glovebag inside Tent	3[b]	3[b]	3[b]
3.	Tent	3[b]	3[b]	3[b]
4.	Exterior Foam and Vertical Surfaces	-	3[c]	3[d]
5.	Interior Foam	6	3[c]	6[d]
	Minor Projects			
1.	Glovebag inside Tent	-	-	1[d]
2.	Tent	-	-	1[d]
3.	Exterior Foam and Vertical Surfaces	-	-	1[d]
4.	Interior Foam	-	-	1[d]

Notes:

a. if more than three (3) tents then two (2) samples required per enclosure.
b. if more than three (3) tents then one (1) sample required per enclosure.
c. samples shall be taken within the work area(s).
d. area sampling is required only if:
- visible emissions are detected during the project
- during-abatement area sampling results exceeded 0.01 f/cc or the pre-abatement area sampling result(s) for interior projects where applicable.
- work area to be reoccupied is an interior space at a school, healthcare, or daycare facility.

H. Prior to commencement of abatement activities, the Third Party Air Monitoring Firm will collect a minimum number of area samples inside each homogeneous work area.

1. Samples will be taken during normal occupancy activities and circumstances at the work site.

2. Samplers shall be located within the proposed work area and at all proposed isolation barrier locations.

3. Samples shall be analyzed using PCM.

4. The number of samples to be collected will be determined by the size of the project and the abatement methods to be utilized.

I. Frequency and duration of the air sampling during abatement shall be representative of the actual conditions during the abatement. The size of the asbestos project will be a factor in the number of samples required to monitor the abatement activities. The following minimum schedule of samples shall be required daily.

1. For large asbestos projects employing full containment, area air sampling shall be performed at the following locations:

a. Two area samples outside the work area in uncontaminated areas of the building, remote from the decontamination facilities.

(1) Primary location selection shall be within 10 feet of isolation barriers.

(2) Where negative ventilation exhaust runs through uncontaminated building areas, one of the area samples will be required in these areas to monitor any potential fiber release.

(3) Where exhaust tubes have been grouped together in banks of up to five (5) tubes, with each tube exhausting separately and the bank of tubes terminating together at the same controlled area, one area air sample shall be taken.

b. One area sample within the uncontaminated entrance to each decontamination enclosure system.

c. Where adjacent non-work areas do not exist, an exterior area sample shall be taken.

d. One area sample within 5 feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors but not within a duct.

e. One area sample outside, but within 25 feet of, the building or structure, if the entire building or structure is the work area.

2. For large asbestos projects involving interior foam method, area air sampling shall be performed at the following sampling locations:

   a. One area sample taken outside the work area within 10 feet of isolation barriers.

   b. One area sample taken within the uncontaminated entrance to each worker decontamination and waste decontamination enclosure system.

   c. One area sample within 5 feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors but not within a duct, if applicable.

   d. Three area samples inside the work area.

   e. One area sample where the negative ventilation exhaust ducting runs through uncontaminated building areas, if applicable.

3. For large asbestos projects employing the glovebag procedure within a tent, a minimum of five continuous air samples shall be taken concurrently with the abatement for each work area, unless there are more than three enclosures, in which case two area samples per enclosure are required.

   a. Four area samples taken outside the work area within ten feet of tent enclosure(s).

   b. One area sample taken within the uncontaminated entrance to each worker and waste decontamination enclosure system.

   c. One area sample within five feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors, but not within a duct, if applicable.

   d. One area sample where negative ventilation exhaust ducting runs through uncontaminated building areas, if applicable.

4. For large asbestos projects involving exterior foam method or removal of ACM from vertical surfaces, a minimum of five continuous area samples shall be taken concurrently with the abatement for each work area using the following minimum requirements:

   a. Three area samples inside the work area and remote from the decontamination systems.

b. One area sample within the uncontaminated entrance to each worker and waste decontamination enclosure system.

c. One area sample outside the work area within 25 feet of the building or structure, if the entire building or structure is the work area.

d. One area sample inside the building or structure at the egress point to the work area, if applicable.

5. For small asbestos projects employing full containment, a minimum of three continuous area samples shall be taken concurrently with the abatement for each work area at the following locations:

a. Two area samples taken outside the work area within ten feet of the isolation barriers.

b. One area sample within the uncontaminated entrance to each worker or waste decontamination enclosure system.

c. One area sample within five feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors, but not within a duct, if applicable.

d. One area sample where negative ventilation exhaust ducting runs through an uncontaminated building area, if applicable.

6. Tent Procedures:
For projects involving more than 25 linear feet or 10 square feet, a minimum of three continuous samples shall be taken concurrently throughout abatement.

J. Post-abatement clearance air monitoring for projects not solely employing glove-bag procedures shall include a minimum number of area samples inside each homogeneous work area and outside each homogeneous work area (five samples inside/five samples outside for Large Projects and three samples inside/three samples outside for Small Projects). In addition to the five sample inside/five sample outside minimum for Large Projects, one additional representative area sample shall be collected inside and outside the work area for every 5,000 square feet above 25,000 square feet of floor space where ACM has been abated.

K. Post-abatement clearance air monitoring for Small Projects solely employing glove-bag procedures is not required unless one or more of the following events occurs. In such cases, post-abatement clearance air monitoring procedures shall be followed. The events requiring post-abatement clearance air monitoring are:

1. The integrity of the glove-bag was compromised,

2. Visible emissions are detected outside the glove-bag, and/or

3. Ambient levels exceed 0.01 f/cc during abatement.

L. Monitoring requirements for other than post-abatement clearance air monitoring are as follows:

1. The sampling zone for indoor air samples shall be representative of the building occupants' breathing zone.

2. If possible, outdoor ambient and baseline samplers should be placed about 6 feet above the ground surface in reasonable proximity to the building and away from obstructions and drafts that may unduly affect airflow.

3. For outdoor samples, if access to electricity and concerns about security dictate a rooftop site, locations near vents and other structures on the roof that would unduly affect airflow shall be avoided.

4. Air sampling equipment shall not be placed in corners of rooms or near obstructions such as furniture.

5. Samples shall have a chain of custody record.

M. Area air sampling during abatement shall be conducted as specified in the following documents except as restricted or modified herein:

1. Measuring Airborne Asbestos Following an Abatement Action, US EPA document 600/4-85-049 (Nov., 1985);

2. Guidance for Controlling Asbestos-Containing Materials in Buildings; US EPA Publication 560/5-85- 024 (June, 1984);

3. Methodology for the Measurement of Airborne Asbestos by Electron Microscopy US EPA Contract No. 68-02- 3266;

4. Mandatory and non-mandatory Electron Microscopy Methods set forth in 40 CFR Part 763, Subpart E, Appendix A.

5. NIOSH 7400 method using "A" counting rules

N. In accordance with the above criteria, area samples (see NYCDEP Asbestos Control Program Regulations) shall conform to the following schedule:

Area Samples for Analysis by	Minimum Volume	Flow Rate
PCM, 25mm cassettes	560 liters	5 to 15 liters/minute
TEM, 25mm cassettes	560 liters	1 to 10 liters/minute
TEM, 37mm cassettes	1,250 liters	1 to 10 liters/minute

O. Post-abatement clearance air monitoring requirements are as follows:

1. Sampling shall not begin until at least one hour after wet cleaning has been completed and no visible pools of water or condensation remain.

2. Samplers shall be placed at random around the work area. If the work area contains the number of rooms equivalent to the number of required samples based on floor area, a sampler shall be placed in each room. When the number of rooms is greater than the required number of samples, a representative sample of rooms shall be selected.

3. The representative samplers placed outside the work area but within the building shall be located to avoid any air that might escape through the isolation barriers and shall be approximately 50 feet from the entrance to the work area, and 25 feet from the isolation barriers.

P. The following aggressive sampling procedures shall be used within the work area during all clearance air monitoring:

1. Before starting the sampling pumps, use forced air equipment (such as a one horsepower leaf blower) to direct exhaust air against all walls, ceilings, floors, ledges and other surfaces in the work area. This pre-sampling procedure shall take at least five minutes per 1,000 square feet of floor area; then

2. Place a 20-inch diameter fan in the center of the room. Use one fan per 10,000 cubic feet of room space. Place the fan on slow speed and point it toward the ceiling.

3. Start the sampling pumps and sample for the required time or volume.

4. Turn off the pump and then the fan(s) when sampling is completed.

5. Collect a minimum number of area samples inside and outside each homogeneous work area (five inside/five outside samples for Large Projects and three inside/three outside samples for Small Projects). In addition to the minimum for Large Projects, one representative area samples shall be collected inside and outside the work area for every 5,000 square feet above 25,000 square feet of floor space where ACM has been abated.

Q. For post-abatement monitoring, area samples shall conform to the following schedule:

Area Samples for Analysis by	Minimum Volume	Flow Rate
PCM	1,800 liters	5 to 15 liters/minute
TEM	1,250 liters	1 to 10 liters/minute

1. Each homogeneous work area that does not meet the clearance criteria shall be thoroughly re-cleaned using wet methods, with the negative pressure ventilation system in operation. New samples shall be collected in the work area as described above. The process shall be repeated until the work site meets the clearance criteria.

2. For an asbestos project with more than one homogeneous work area, the release criterion shall be applied independently to each work area.

3. Should airborne fiber concentrations exceed the clearance criteria, the Contractor shall re-clean the work area utilizing wet wiping and HEPA-vacuuming techniques. Following completion of re-cleaning activities, the Third-Party Air Monitor will perform an observation of the Work Area. If the Third-Party Air Monitor determines that the work was performed in accordance with the specifications, the appropriate settling period will be observed and additional air sampling will be performed.

4. All costs resulting from additional air tests and observations shall be borne by the Contractor. These costs may include, but are not limited to, labor, analysis fees, materials, and expenses.

5. After the area has been found to be in compliance, the Contractor may remove Isolation Barriers and perform final cleaning as specified.

R. Clearance and/or Re-occupancy Criteria:

1. The clearance criteria shall be applied to each homogeneous work area independently.

2. For PCM analysis, the clearance air monitoring shall be considered satisfactory when each of the 5 inside/5 outside samples for Large Projects

and/or 3 inside/3 outside samples for Small Projects is less than or equal to 0.01 f/cc or the background concentrations, whichever is greater.

3. For TEM analysis, the clearance air monitoring shall be considered satisfactory when the requirements stated in 40 CFR Part 763, Subpart E, Appendix A, Section IV are met.

4. As soon as the air monitoring tests are completed, the Third-Party Air Monitor will send the results of such tests to the City and notify the Contractor.

5. The Contractor shall initiate the appropriate closeout information into the DEP ARTS database within 24 hours of work area completion to allow the Third Party Air Monitoring Firm to complete and submit the ACP-15 forms for each specific work area.

6. The Contractor shall provide the ACP-20 and ACP-21 forms to the Third Party Air Monitoring Firm within 48 hours of receipt.

1.19 TAMPERING WITH TEST EQUIPMENT

All parties to this Contract are hereby notified that any tampering with testing equipment will be considered an attempt at falsifying reports and records to federal and state agencies and each offense will be prosecuted under applicable state and federal criminal codes to the fullest extent possible.

1.20 GUARANTEE

A. Work performed in compliance with this Contract shall be guaranteed for a period of one year from the date the completed work is accepted by the City.

B. The Contractor shall not be held liable for the guarantee where the repair required under the guarantee is a result of obvious abuse or vandalism, as determined by the Commissioner.

C. The City will notify the Contractor in writing regarding defects in work under the guarantee.

PART 2 – PRODUCTS

2.01 MATERIAL HANDLING

A. Deliver all materials to the job site in their manufacturer's original container, with the manufacturer's label intact and legible.

1. Maintain packaged materials with seals unbroken and labels intact until time of use.

2. Store all materials on pallets, away from any damp and/or wet surface. Cover materials in order to prevent damage and/or contamination.

3. Promptly remove damaged materials and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the City.

B. The Construction Project Manager may reject as non-complying such material and products that do not bear identification satisfactory to the Construction Project Manager as to manufacturer, grade, quality and other pertinent information.

2.02 MATERIALS

A. Wetting agents: (Surfactant) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.

B. Encapsulants: Liquid material which can be applied to asbestos-containing material which temporarily controls the possible release of asbestos fibers from the material or surface either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

C. During abatement activities, replacement materials shall be stored outside the work area in a manner to prevent contamination. Materials required for the asbestos project (i.e., plastic sheeting, replacement filters, duct tape, etc.) shall be stored to prevent damage or contamination.

D. Framing Materials and Doors: As required to construct temporary decontamination facilities and isolation barriers. Lumber shall be high grade, new, finished one side and fire retardant.

E. Fire Retardant Polyethylene Sheeting: minimum uniform thickness of 6-mil. Provide largest size possible to minimize seams. All materials used in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.

F. Fire Retardant Reinforced Polyethylene Sheeting: For covering floor of decontamination units, provide translucent, nylon reinforced or woven polyethylene laminated, fire retardant polyethylene sheeting. Provide largest size possible to minimize seams, minimum uniform thickness 6-mil. All materials used in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.

G. Drums: Asbestos-transporting drums, sealable and clearly marked with warning labels as required by OSHA and EPA.

H. Polyethylene Disposal Bags: Asbestos disposal bags, minimum of fire retardant 6-mil thick. Bags shall be clearly marked with warning labels as required by OSHA and EPA.

I. Signs: Asbestos warning signs for posting at perimeter of Work Area, as required by OSHA and EPA.

J. Waste Container Bag Liners and Flexible Trailer Trays: One piece leak-resistant flexible tray with absorbent pad.

K. Tape: Provide tape which is of high quality with an adhesive that is formulated to aggressively stick to sheet polyethylene.

L. Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

M. Flexible Duct: Spiral reinforced flex duct for air filtration devices.

N. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Protective clothing shall conform to OSHA Standard 29 CFR 1926.1101.

O. Surfactants, strippers, sealers, or any other chemicals used shall be non-carcinogenic and non-toxic.

P. Materials used in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.

2.03 TOOLS AND EQUIPMENT

A. Air Filtration Device (AFD): AFDs shall be equipped with High Efficiency Particulate Air (HEPA) filtration systems and shall be approved by and listed with Underwriter's Laboratory.

B. Scaffolding: All scaffolding shall be designed and constructed in accordance with OSHA (29 CFR 1926/1910), New York City Building Code, and any other applicable federal, state and local government regulations. Whenever there is a conflict or overlap of the above references the most stringent provisions are applicable. All scaffolding and components shall be capable of supporting without failure a minimum of four times the maximum intended load, plus an allowance for impact. All scaffolding and staging must be certified in writing by a Professional Engineer licensed to practice in the State of New York.

1. Equip rungs of all metal ladders, etc., with an abrasive, non-slip surface.

2. Provide non-skid surface on all scaffold surfaces subject to foot traffic. Scaffold ends and joints shall be sealed with tape to prevent penetration of asbestos fibers.

C. Transportation Equipment: Transportation Equipment, as required, shall be suitable for loading, temporary storage, transit and unloading of asbestos contaminated waste without exposure to persons or property. Any temporary storage containers positioned outside the building for temporary storage shall be metal, closed and locked.

D. Vacuum Equipment: All vacuum equipment utilized in the Work Area shall utilize HEPA filtration systems.

E. Vacuum Attachments: Soft Brush Attachment, Asbestos Scraper Tool, Drill Dust Control Kit.

F. Electric Sprayer: An electric airless sprayer suitable for application of encapsulating material and shall be approved by and listed with Underwriters Laboratory.

G. Water Sprayer: The water sprayer shall be an airless or other low-pressure sprayer for amended water application.

H. Water Atomizer: Powered air-misting device equipped with a ground fault interrupter and equipped to operate continuously.

I. Brushes: All brushes shall have nylon bristles. Wire brushes are excluded from use due to their potential to shred asbestos fibers into small, fine fibers. Wire brushes maybe used for cleaning pipe joints within glove-bags upon written approval of the Construction Project Manager.

J. Power tools used to drill, cut into, or otherwise disturb ACM shall be manufacturer-equipped with HEPA filtered local exhaust ventilation. Abrasive removal methods, including the use of beadblasters, are prohibited.

K. Other Tools and Equipment: Contractor shall provide other suitable tools for the stripping, removal, encapsulation, and disposal activities including but not limited to: hand-held scrapers, sponges, rounded-edge shovels, brooms, and carts.

L. Fans and Leaf Blower: Provide Leaf Blower (one leaf blower per floor) and one 20-inch diameter fans for each 10,000 cubic feet of Work Area volume to be used for aggressive sampling technique for clearance air testing.

M. Fire Extinguishers: At least one fire extinguisher with a minimum rating 2-A:10-

B:C shall be required for each work place. In the case of large asbestos projects, at least two such fire extinguishers shall be required.

N. First Aid Kits: Contractor shall maintain adequately stocked first aid kits in the clean rooms of the decontamination units and within Work Areas. The first aid kit shall be approved by a licensed physician for the work to be performed under this Contract.

O. Water Service:

1. Temporary Water Service Connection: All connections to the Facilities water system shall include back flow protection. Valves shall be temperature and pressure rated for operation of the temperature and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping, and equipment. Leaking or dripping fittings/valves shall be repaired and or replaced as required.

2. Water Hoses: Employ new heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each Work Area and to each Decontamination Enclosure Unit. Provide fittings as required for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.

3. Water Heater: Provide UL rated 40-gallon electric water heaters to supply hot water for Personal Decontamination Enclosure System Shower. Activate from 30 Amp Circuit breakers located within the Decontamination Enclosure sub panel. Provide relief valve compatible with water heater operations, pipe relief valve down to drip pan at floor level with type 'L' copper piping. Drip pans shall be 6-inch deep and securely fastened to water heater. Wiring of the water heater shall comply with NEMA, NECA, and UL standards.

P. Electrical Service:

1. General: Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.

2. Temporary Power: Provide service to decontamination unit sub panel with minimum 60 AMP, two pole circuit breaker or fused disconnect connected to the building's main distribution panel. Sub panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.

3. Voltage Differences: Provide identification warning signs at power outlets that are other than 110-120 volt power. Provide polarized outlets for plug-in

type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.

4. Ground Fault Protection: Equip all circuits for any purpose entering Work Area with ground fault circuit interrupters (GFCI). Locate the GFCIs outside the Work Area so that all circuits are protected prior to entry to Work Area. Provide circuit breaker type ground fault circuit interrupters (GFCI) equipped with test button and reset switch for all circuits to be used for any purpose in Work Area, decontamination units, exterior, or as otherwise required by NEC, OSHA or other authority.

5. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead, and rise vertically where wiring will be least subject to damage from operations.

6. Temporary Wiring: In the Work Area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance. Provide liquid tight enclosures or boxes for all wiring devices. Do not wire temporary lighting with plain, exposed (insulated) electrical conductors.

7. Electrical Power Cords: Use only grounded extension cords; use hard service cords where exposed to traffic and abrasion. Use single lengths of cords only.

8. Temporary Lighting: All lighting within the Work Area shall be liquid and moisture proof and designed for the use intended.

    a. Provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting.

    b. Provide lighting in the Decontamination Unit as required to supply a minimum 50-foot candle light level.

9. If electrical circuits, machinery, and other electrical systems in or passing though the work area must stay in operation due to health and safety requirements, the following precautions must be taken:

    a. All unprotected cables, except low-voltage (less than 24 volts) communication and control system cables, panel boxes of cables and joints in live conduit that run through the work area shall be covered with three (3) independent layers of six (6) mil fire retardant polyethylene. Each layer shall be individually duct taped and sealed. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air sampling results have been obtained.

2.04 CLEANING

A. Throughout the construction period, the Contractor shall maintain the building as described in this Section.

1. The Contractor shall prevent building areas other than the Work Area from becoming contaminated with asbestos-containing dust or debris. Should areas outside the Work Area become contaminated with asbestos-containing dust or debris as a consequence of the Contractor's work practices, the Contractor shall be responsible for cleaning these areas in accordance with the procedures appended in Title 15, Chapter 1 of RCNY and NYSDOL ICR56. All costs incurred in cleaning or otherwise decontaminating non-Work Areas and the contents thereof shall be borne by the Contractor at no additional cost to the City.

2. The Contractor shall provide to all personnel and laborers the required equipment and materials needed to maintain the specified standard of cleanliness.

B. General

1. Waste water from asbestos removal operations, including shower water, may be discharged into the public sewer system only after approved filtration is on operation to remove asbestos fibers.

2. Asbestos wastes shall be double bagged in six mil (.006") fire retardant polyethylene bags approved for ACM disposal and shall be properly labeled and handled before disposal.

3. All waste generated shall be bagged, wrapped or containerized immediately upon removal. The personal and waste decontamination enclosure systems and floor and scaffold surfaces shall be HEPA vacuumed and wet cleaned at the end of each work shift at a minimum.

4. The Contractor shall use corrugated cartons or drums for disposal of asbestos-containing waste having sharp edged components (e.g., nails, screws, metal lathe and tin sheeting) that may tear polyethylene bags and sheeting. The waste within the drums or cartons must be double bagged.

5. The Contractor shall transport all bags of waste to disposal site in thirty gallon capacity metal or fiber drums with tight lids, or in locked steel dumpster.

6. Dumping of debris, waste or bagged waste will not be permitted.

7. The waste decontamination enclosure system shall be wet cleaned twice using wet cleaning methods upon completion of waste removal. When the worker decontamination enclosure shower room alternates as a waste container wash room, the shower room shall be washed immediately with cloths or mops saturated with a detergent solution prior to wet cleaning.

8. Excessive water accumulation or flooding in the work area shall require work to stop until the water is collected and disposed of properly.

9. ACM shall be collected utilizing rubber dust pans and rubber squeegees.

10. HEPA vacuums shall not be used on wet materials unless specifically designed for that purpose.

11. Metal shovels shall not be used within the work area.

12. Mastic solvent when used will be applied in moderation (e.g., by airless sprayer). Saturation of the concrete floor with mastic solvent must be avoided.

13. The Contractor shall retain all items in the storage area in an orderly arrangement allowing maximum access, not impeding traffic, and providing the required protection of all materials.

14. The Contractor shall not allow accumulation of scrap, debris, waste material, and other items not required for use in this work. When asbestos contaminated waste must be kept on the work site overnight or longer, it shall be double bagged and stored in accordance with New York City Department of Sanitation (NYCDOS) regulation Title 16 Chapter 8, and Federal, State and City laws.

15. At least twice a week (more if necessary), the Contractor shall completely remove all scrap, debris and waste material from the job site.

16. The Contractor shall provide adequate storage space for all items awaiting removal from the job site, observing all requirements for fire protection and concerns for the environment.

17. All respiratory protection equipment shall be selected from the latest NIOSH Certified Equipment list.

18. Daily and more often, if necessary, the Contractor shall inspect the Work Areas and adjoining spaces, and pick up all scrap, debris, and waste material. All such items shall be removed to the place designated for their storage.

19. Weekly, and more often, if necessary, the Contractor shall inspect all arrangements of materials stored on the site; re-stack and tidy them or otherwise service them to meet the requirements of these Specifications.

20. The Contractor shall maintain the site in a neat and orderly condition at all times.

PART 3 – EXECUTION

3.01 WORKER DECONTAMINATION FACILITY

A. Large Asbestos Projects (Small Project Option):

1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas

a. Structure:

(1) Use modular systems or build using wood or metal frame studs, joists, and rafters placed at a maximum of 16 inches on-center.

(2) When worker decontamination unit is located outdoors, in areas with public access, or in correctional facilities, frame work shall be lined with minimum 3/8" thickness fire rated plywood sheathing. Sheathing shall be caulked or taped airtight at all joints and seams.

(3) Interior shall be covered with two layers of fire retardant 6-mil polyethylene sheeting, with a minimum overlap of 12 inches at seams. Seal seams airtight using tape and adhesive. The interior floor shall be covered with two (2) layers of reinforced fire-retardant polyethylene sheeting with a minimum overlap on the walls of twelve inches.

(4) Entrances to the decontamination unit shall be secured with lockable hinged doors. Doors shall be open at all times when abatement operations are in progress. Doors shall be louvered to allow for air movement through the decontamination units into Work Area.

b. Curtained Doorways: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.

c. Air Locks: Air locks shall consist of two curtained doorways placed a minimum of three feet apart.

d. Decontamination Enclosure System shall be placed adjacent to the Work Area and shall consist of three totally enclosed chambers, separated from Work Area and each other by airlocks, as follows:

(1) Equipment Room: The equipment room shall have a curtain doorway to separate it from the Work Area, and share a common airlock with the shower room. The equipment room shall be large enough to accommodate at least one worker (allowing them enough room to remove their protective clothing and footwear), and a fire retardant 6-mil disposal bag for collection of discarded clothing and equipment. The equipment room shall be utilized for the storage of equipment and tools after decontamination using a HEPA-vacuum and/or wet cleaning. A one-day supply of replacement filters, in sealed containers, for HEPA-vacuums and negative air machines, extra tools, containers of surfactant, and other materials and equipment required for the project shall be stored here. A walk-off pan filled with water shall be placed in the Work Area just outside the equipment room for persons to clean foot coverings when leaving the Work Area. Contaminated footwear and reusable work clothing shall be stored in this room.

(2) Shower Room: The shower room shall have two airlocks (one that separates it from the equipment room and one that separates it from the clean room). The shower room shall contain at least one shower, with hot and cold water adjustable at the tap, per six workers. Careful attention shall be given to the shower to ensure against leaking of any kind and shall contain a rigid catch basin at least six inches deep. Contractor shall supply towels, shampoo and liquid soap in the shower room at all times. Shower water shall be continuously drained, collected, and filtered through a system with at least a 5-micron particle size collection capacity. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filters by large particles. Pumps shall be installed, maintained and utilized in accordance with manufacturer's recommendations. Filtered water shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos waste.

(3) Clean Room: The clean room shall share a common airlock with the shower room and shall have a curtained doorway to separate it from outside non-contaminated areas. Lockers, for

storage of workers' street clothing, and shelves, for storing respirators, shall be provided in this area. Clean disposable clothing, replacement filters for respirators, and clean dry towels shall be provided in the clean room. The clean room shall not be used for the storage of tool, equipment or other materials.

B. Small Asbestos Projects:

1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas.

2. The worker decontamination enclosure system shall consist of, as a minimum, an equipment room, a shower room, and a clean room separated from each other and from the work area by curtained doorways. The equipment storage, personnel gross decontamination and removal of disposal clothing shall occur in the equipment room prior to entering the shower. All other requirements shall be the same as described above for a large asbestos project.

3. For small asbestos projects with only one exit from the work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage. All other requirements shall be the same as described above for a large asbestos project.

C. Decontamination Enclosure System Utilities: Lighting, heat, and electricity shall be provided as necessary by the Contractor, and as specified herein.

3.02 WASTE DECONTAMINATION FACILITY

A. Large Asbestos Project (Small Project Option)

1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas.

a. Structure:

(1) Use modular systems or build using wood or metal frame studs, joists, and rafters placed at a maximum of 16 inches on-center.

(2) When worker decontamination unit is located outdoors, in areas with public access, or in correctional facilities, frame

work shall be lined with minimum 3/8" thickness fire rated plywood sheathing. Sheathing shall be caulked or taped airtight at all joints and seams.

(3) Interior walls shall be covered with two layers of fire retardant 6-mil polyethylene sheeting, with a minimum overlap of 12 inches at seams. Seal seams airtight using tape and adhesive. The interior floor shall be covered with two (2) layers of reinforced fire-retardant polyethylene sheeting with a minimum overlap on the walls of twelve inches.

(4) Entrances to the decontamination unit shall be secured with lockable hinged doors. Doors shall be open at all times when abatement operations are in progress. Doors shall be louvered to allow for air movement through the decontamination units into the Work Area.

b. Curtained Doorways: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.

c. Air Locks: Air locks shall consist of two curtained doorways placed a minimum of three feet apart.

d. Decontamination Enclosure System shall be located outside the work area and attached to all locations through which ACM waste will be removed from the work area and shall consist of two totally enclosed chambers, separated from the Work Area and each other by airlocks, as follows:

(1) Washroom: An equipment washroom shall have two air locks (one separating the unit from the Work Area and one common air lock that separates it from the holding area). The washroom shall have facilities for washing material containers and equipment. Gross removal of dust and debris from contaminated material containers and equipment shall be accomplished in the Work Area, prior to moving to the washroom.

(2) Holding Area: A holding area shall share a common air lock with the equipment washroom and shall have a curtained doorway to outside areas. A hinged, lockable door shall be placed at the holding area entrance to prevent unauthorized access into the Work Area.

B. Small Asbestos Project:

1. The worker decontamination enclosure system shall consist of, as a minimum, an equipment room, a shower room, and a clean room separated from each other and from the work area by curtained doorways. The equipment storage, personnel gross decontamination and removal of disposal clothing shall occur in the equipment room prior to entering the shower. All other requirements shall be the same as described above for a large asbestos project.

2. For small asbestos projects with only one exit from the work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage. All other requirements shall be the same as described above for a large asbestos project.

C. Decontamination Enclosure System Utilities: Lighting, heat, and electricity shall be provided as necessary by the Contractor, and as specified herein.

3.03 PERSONNEL ENTRANCE AND DECONTAMINATION PROCEDURES FOR REMOVAL OPERATIONS UTILIZING REMOTE DECONTAMINATION FACILITIES

A. All individuals who enter the Work Area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall fully identify the facility, agents, contractor(s), the project, each Work Area, and worker respiratory protection employed. The job supervisor shall be responsible for the maintenance of the log during the abatement activity. The log shall be submitted to the NYC DDC within 48 hours of request.

B. Each worker shall remove street clothes in the clean room; wear two disposable suits, including gloves, hoods and non-skid footwear; and put on a clean respirator (with new filters) before entering the Work Area.

C. Each worker shall, before leaving the Work Area or tent, clean the outside of the respirators and outer layer of protective clothing by wet cleaning and/or HEPA-vacuuming. The outer disposable suit shall be removed in the airlock prior to proceeding to the Worker Decontamination Unit. The inner disposable suit and respirator shall be wet wiped and HEPA vacuumed thoroughly before removing and prior to aggressive shower.

D. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately.

3.04 PERSONNEL ENTRANCE AND DECONTAMINATION PROCEDURES FOR REMOVAL OPERATIONS UTILIZING ATTACHED DECONTAMINATION FACILITIES

A. All workers and authorized visitors shall enter the Work Area through the worker decontamination facility.

B. All individuals who enter the Work Area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each Work Area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity. The log shall be submitted to the NYC DDC within 48 hours of request.

C. Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator with filters, and clean protective clothing before entering the Work Area through the shower room and equipment room.

D. Each worker or authorized visitor shall, each time he leaves the Work Area, remove gross contamination from clothing before leaving the Work Area; proceed to the equipment room and remove clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.

E. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the Work Area is not permitted outside the Work Area.

3.05 MAINTENANCE OF DECONTAMINATION ENCLOSURE FACILITIES AND BARRIERS

The following procedures shall be followed during abatement activities.

A. All polyethylene barriers inside the work place and partitions constructed to isolate the Work Area from occupied areas shall be inspected by the asbestos handler supervisor at least twice per shift.

B. Smoke tubes shall be used to test the integrity of the Work Area barriers and the decontamination enclosure systems daily before abatement activity begins and at the end of each shift.

C. Damage and defects in the decontamination enclosure system shall be repaired immediately upon discovery. The decontamination enclosure system shall be maintained in a clean and sanitary condition at all times.

D. At any time during the abatement activity, if visible emissions are observed, or elevated asbestos fiber counts outside the Work Area are measured, or if damage occurs to barriers, abatement shall stop. The source of the contamination shall be located, the integrity of the barriers shall be restored and extended to include the contaminated area, and visible residue shall be cleaned up using appropriate HEPA-vacuuming and wet cleaning.

E. Inspections and observations shall be documented in the daily project log by the asbestos handler supervisor.

F. The daily inspection to ensure that exits have been checked against exterior blockage or impediments to exiting shall be documented in the log book. If exits are found to be blocked, abatement activities shall stop until the blockage is cleared.

3.06 MODIFICATIONS TO HVAC SYSTEMS

A. Shut down, isolate or seal, all existing HVAC units, fans, exhaust fans, perimeter convection air units, supply and/or return air ducts, etc., situated in, traversing or servicing the work zone.

B. Seal all seams with duct tap. Wrap entire duct with a minimum of two layers of fire retardant 6-mil polyethylene sheeting. All shutdowns are to be coordinated with the Facility. Where systems must be maintained, i.e., traversing Work Areas to non-Work Areas, only supply ducts will be maintained, protect as described above. All returns must be blanked off in Work Area and adjacent areas, including floor above and below Work Area. When required Contractor shall apply for a clarification from NYCDEP. The Contractor shall implement the following engineering procedures:

1. Maintenance of a positive pressure within the HVAC system of 0.01 inch water gauge (or greater) with respect to the ambient pressure outside the Work Area. The conditions for this system shall be maintained and be operational 24 hours per day from the initiation of Work Area preparation until successful final air clearance. Positive pressurization of HVAC system shall be applied only under the direction and control of professional engineer, or other knowledgeable licensed professional;

2. The positive pressurization of the duct shall be tested, inspected and recorded both at the beginning and at the end of each shift;

3. The positive pressurization shall be monitored using instrumentation which will provide a written record of pressurization and that will trigger an audible alarm, if the static pressure falls below the set value;

4. The supply air fan and the supply air damper for the active positive-pressurized duct shall be placed in the manual "on" positions to prevent shutdown by fail-safe mechanisms;

5. The return air fan and the return air dampers shall be shut down and locked-out;

6. All the seams of the HVAC ducts that pass through the Work Area shall be sealed;

7. The HVAC ducts that pass through the Work Area shall be covered with two (2) layers of fire retardant 6-mil polyethylene sheeting, and all seams and edges of both layers shall be sealed airtight;

8. The supply air fans, return air fans, and all dampers servicing the Work Area itself shall be shut down and locked-out. All openings within the Work Area of supply and return air ducts shall be sealed with 3/8-inch fire rated plywood and two layers of fire retardant 6-mil polyethylene;

9. When abatement occurs during periods while the HVAC system is shut down an alternative method of pressurization of the duct passing through the Work Area should be employed (e.g., by low-pressure "blowers", etc., directly coupled into the duct). Item #4 above shall be deleted and shall be replaced by the requirement to set the dampers of the HVAC duct in the manual closed positions, in order to effect pressurization.

C. Contractor to coordinate this item with the Facility and Construction Project Manager at the commencement of work. Where present HVAC systems (ducts) service an area and that air system cannot be shut down, Contractor shall isolate and seal the ducts, both supply and return, at the boundary of that zone.

1. To isolate, cap, or seal a duct, the Contractor shall remove insulation from duct (if necessary), then disconnect linkage to fold shut all fire dampers. Contractor shall seal all edges and seams with caulk and duct-tape.

2. Contractor shall then cut existing duct and fold metal in and secure with approved fasteners. Contractor shall caulk and duct-tape all seams and edges.

3. All ducts shall then be completely wrapped and sealed with duct-tape and three (3) layers of reinforced polyethylene sheeting.

4. All ducts shall be restored to original working order at the end of the project.

D. Where present HVAC systems (ducts) service occupied areas (non-Work Areas), the Contractor shall blank off the ducts.

1. To isolate or seal the return duct, the Contractor shall remove any insulation (if necessary) from the duct. Then disconnect linkage to fold shut all fire dampers and insert a fiberglass board within the duct. Contractor shall seal all edges and seams with caulk, duct-tape and three (3) layers of reinforced polyethylene sheeting.

2. All isolation of return ducts and any other activity that requires removal of ceiling by the Contractor shall be conducted under controls. Work is to be coordinated with the Construction Project Manager and the Facility and is described as follows:

   a. Work shall occur as scheduled.

   b. Horizontal surfaces near the blanking operations shall be protected with fire retardant 6-mil polyethylene sheeting.

   c. Plastic drapes shall be used to enclose the immediate area.

   d. Contractor to position and operate air filtration devices and HEPA-vacuums in the area to clean space after blanking operations.

   e. All personnel involved with this work shall receive personal protection (i.e., respirators and disposable suits).

E. Upon loss of negative pressure or electric power, all work activities in an area shall cease immediately and shall not resume until negative pressure and/or electric power has been fully restored. When a power failure or loss of negative pressure lasts, or is expected to last, longer than thirty (30) minutes, the following sequence of events shall occur.

1. All make up air inlets shall be sealed airtight.

2. All decontamination facilities shall be sealed airtight after evacuation of all personnel from the Work Area.

3. All adjacent areas shall be monitored for potential fiber release upon discovery of and subsequently throughout, power failure.

3.07 LOCKOUT OF HVAC SYSTEMS, ELECTRIC POWER, AND ACTIVE BOILERS

Prior to the start of any prep work, the Contractor shall employ skilled tradesmen with limited asbestos licenses for the following work:

A. Disable all ventilating systems or other systems bringing air into or exhausting air out of the Work Area. Disable system by disconnecting wires removing circuit breakers, by lockable switch or other positive means to ensure against accidental re-starting of equipment.

B. Lock out power to the Work Area by switching off all breakers and removing them from panels or by switching and locking entire panel. Label panel with following notation: "DANGER CIRCUIT BEING WORKED ON". Give all keys to Facility.

C. Lock out power to circuits running through Work Area whenever possible by switching off and removing breakers from panel. If circuits must remain live, the Facility shall notify Contractor in order that he may secure a variance from NYCDEP. The Contractor shall protect all conduit and wires to remain and label all active circuits at intervals not to exceed 3 feet with tags having the following notation: "DANGER LIVE ELECTROCUTION HAZARD". The Contractor shall label all circuits in all locations including hidden locations that may be affected by the work in a similar manner.

D. All boilers and other equipment within the work area shall be shut down, locked out, tagged out and the burner/boiler/equipment accesses and openings shall be sealed until abatement activities are complete. If the boiler or other exhausted equipment will be subject to abatement, all breeching, stacks, columns, flues, shafts, and double-walled enclosures serving as exhausts or vents shall be segregated from the affected boiler or equipment and sealed airtight to eliminate potential chimney effects within the work area.

PART 4 – PREPARATION OF WORK AREA AND REMOVAL PROCEDURES

4.01 REMOVAL OF ASBESTOS-CONTAINING MATERIAL

A. Contractor Responsibility

Contractor shall be responsible for the proper removal of ACM from the Work Area using standard industry techniques. The Third-Party Air Monitor representative shall observe the Work.

1. General Requirements:

a. Removal of ACM shall be performed using wet methods. Dry removal of ACM is prohibited.

b. Spray ACM with amended water with sufficient frequency and quantity to enhance penetration. Sufficient time shall be allowed for amended water to penetrate the material to the substrate prior to removal. All ACM shall be thoroughly wetted while work is being conducted.

c. Accumulation of standing water on the floor of the Work Area is prohibited.

d. Apply removal encapsulants, when used, in accordance with the manufacturer's recommendations and guidelines.

e. Containerize ACM immediately upon detachment from the substrate. Alternately, ACM may be dropped in to a flexible catch basin and promptly bagged. Detached ACM is not permitted to lie on the floor for any period of time. Excess air within the bag shall be removed before sealing. ACM shall not be dropped from a height of greater than 10 feet. Above 10 feet, dust free inclined chutes may be used. Maximum inclination from horizontal shall be 60-degrees for all chutes.

f. Exits from the work area shall be maintained, or alternative exits shall be established, in accordance with section 1027 of the New York City Fire Code. Exits shall be checked at the beginning and end of each work shift against blockage or impediments to exiting.

g. Signs clearly indicating the direction of exits shall be maintained and prominently displayed within the work area.

h. No smoking signs shall be maintained and prominently displayed within the work place.

i. At least one fire extinguisher with a minimum rating 2-A:10-B:C shall be required for each work place. In the case of large asbestos projects, at least two such fire extinguishers shall be required.

j. If the containment area of an asbestos project covers the entire floor of the affected building, or an area greater than 15,000 square feet on any given floor, the installation of a negative air cut off switch or switches shall be required at a single location outside the work place, such as inside a stairwell, or at a secured location in the ground floor lobby when conditions warrant. The required switch or switches shall be installed by a licensed electrician pursuant to a permit issued by the Department of Buildings. If negative pressure ventilation equipment is used on multiple floors the cut off switch shall be able to turn off the equipment on all floors.

B. Removal of ACM Utilizing Full Containment Procedures shall be as follows:

1. Preparation Procedures:

a. Ensure that the Third-Party Air Monitor has performed area monitoring and established a background count prior to the preparatory operations for each removal area, as applicable.

b. Shut down, isolate, and lock out or tag heating, ventilating, and air conditioning (HVAC) systems which serve or which pass through the Work Area. Vents within the Work Area and seams in HVAC components shall be sealed with tape and two layers of fire retardant polyethylene sheeting. Filters in HVAC systems shall be removed and treated as asbestos-asbestos contaminated waste.

c. Shut down, disconnect, and lock out or tag all electric power to the Work Area so that there is no possibility of its reactivation until after clearance testing of the Work Area.

d. Provide and install decontamination enclosure systems in accordance with Sections 3.01 and 3.02 of this Section.

e. Remove ACM that may be disturbed by the erection of partitions using tent procedures and wet removal methods. Removal shall be limited to a one-foot wide strip running the length/height of the partition.

f. Pre-clean and remove moveable objects from the Work Area. Pre-cleaning shall be accomplished using HEPA-vacuum and wet-cleaning techniques. Store moveable objects at a location determined by the City.

g. Protect carpeting that will remain in the Work Area.

(1) Pre-clean carpeting utilizing wet-cleaning techniques.

(2) Install a minimum of two layers of fire retardant 6-mil reinforced polyethylene sheeting over carpeting.

(3) Place a rigid flooring material, minimum thickness of 3/8-inch, over polyethylene sheeting.

h. Pre-clean all fixed objects to remain within the Work Area using HEPA-vacuum and wet-cleaning techniques.

i. Seal fixed objects with two individual layers, minimum, of 6-mil fire retardant polyethylene sheeting.

j. Pre-clean entire Work Area utilizing HEPA-vacuum and wet-cleaning techniques. Methods of cleaning that raise dust; such as dry sweeping or use of vacuum equipment not equipped with HEPA-filters, is prohibited.

k. Install isolation barriers (i.e., sealing of all openings, including but not limited to windows, corridors, doorways, skylights, ducts, grills, diffusers, and other penetrations within the Work Area) using two layers of 6-mil fire retardant polyethylene sheeting and duct-tape.

l. Construct rigid framework to support Work Area barriers.

(1) Framework shall be constructed using 2-inch by 4-inch wooden or metal studs placed 16 inch on center when existing walls and/or ceiling do not exist for all openings greater than 32 square feet. Framework is not required except where one dimension is one foot or less or the opening will be used as an emergency exit.

(2) Apply a solid construction material, minimum thickness of 3/8-inch to the Work Area side of the framing. In secure interior areas, not subject to access from the public or building occupants, an additional layer of 6-mil fire retardant polyethylene sheeting may be substituted for the rigid construction material.

(3) Caulk all wall, floor, ceiling, and fixture joints to form a leak tight seal.

m. Seal floor drains, sumps, shower tubs, and other collection devices with two layers of 6-mil fire retardant plastic and fire rated plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.

n. Remove ceiling mounted objects not previously sealed that will interfere with removal operations. Mist object and surrounding ACM with amended water prior to removal to minimize fiber dispersal. Clean all moveable objects using HEPA-vacuum and wet-cleaning techniques prior to removal from the Work Area.

o. Fiberglass insulation with intact coverings shall be protected in place during abatement activities. These materials shall be protected with two layers of 6-mil fire retardant polyethylene sheeting as isolation barriers and two additional layers of 6-mil fire retardant polyethylene sheeting serving as primary and secondary surface barriers.

p. Install and initiate operation of AFDs to provide a negative pressure and a minimum of four air changes per hour within the Work Area relative to surrounding non-Work Areas. Do not shut down AFDs until the Work Area is released to the City following final clearance procedures. The use of HEPA-filtered vacuum to produce a negative air pressure inside the enclosure is prohibited.

q. Maintain emergency and fire exits from the Work Areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the Work Area. Cutting tools (e.g., knife, razor) shall be attached to the work area side of the sheeting for use in the event that the barrier must be cut open to allow egress. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.

r. Temporary lighting within the Work Area and decontamination system shall be provided as required to achieve minimum illumination levels.

s. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be manufacturer-equipped with HEPA filtered local exhaust ventilation.

t. Prior to being plasticized, the Work Areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.

u. Plasticize the area after pre-cleaning, using the following procedures.

(1) Cover floors with one layer of 6-mil fire retardant polyethylene sheeting, turning layer a minimum of 6 inches up wall, and seal layer to wall.

(2) Cover walls with one layer of 6-mil fire retardant polyethylene sheeting, overlapping wall layer a minimum of 6 inches, and seal layer to floor layer.

(3) Cover floors with a second layer of 6-mil fire retardant polyethylene sheeting, turning layer a minimum of 12 inches up wall, and seal layer to wall.

(4) Cover walls with a second layer of fire retardant 6-mil polyethylene sheeting, overlapping wall layer a minimum of 12 inches, and seal layer to floor layer.

(5) In areas where demolition is required to access ACM, a layer of fire retardant 6-mil reinforced polyethylene sheeting shall be placed on the floor of the enclosure.

(6) Perform demolition required to access ACM. Debris resulting from demolition activities shall be disposed of as ACM waste as described in this Specification.

(7) Repeat preparation of areas accessed by demolition activities as described above.

v. Suspended ceiling tiles and T-grid components shall remain in place until the preparation of the Work Area below the ceiling tiles are completed and personnel and equipment decontamination enclosures have been constructed.

w. Scaffolds shall be provided for workers engaged in work that cannot safely be performed from the ground or other solid Work Area surface.

x. Means of egress shall not be obstructed by hardwall barriers.

y. Pre-Removal Inspections.

(1) Prior to removal of any ACM, the Contractor shall notify the Third-Party Air Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.

(2) Contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.

(3) Following the Third-Party Air Monitor's approval of the Work Area preparations, removal of ACM may commence.

2. Removal of ACM Within Full Containment:

   a. Mist material with amended water. Allow sufficient time for the amended water to penetrate the material to be removed.

   b. Remove the material using hand tools such as scrapers or putty knives. Wire-mesh or wood lathe reinforcing, when present, shall be cut into manageable pieces and disposed of as ACM.

   c. Remove any residual material from the substrate using wet cleaning methods and nylon-bristled hand brushes.

   d. Place the removal material immediately into a properly labeled fire retardant 6-mil polyethylene bag. All material shall be properly containerized and decontaminated prior to removal from the Work Area.

   e. Following the completion of removal of insulation, all visible residue shall be removed from the substrate.

3. Following Removal of ACM utilizing Full Containment Procedures:

   a. First Cleaning:

      (1) Remove any visible accumulation of asbestos material and debris. HEPA-vacuuming and wet cleaning shall be performed on all surfaces inside the Work Area. All sealed drums, plastic bags, and equipment used in the Work Area shall be removed from the Work Area.

      (2) Upon request of the Contractor, the Third-Party Air Monitor will perform a visual inspection. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.

      (3) Remove first layer of plastic sheathing inside the Work Area. The isolation barriers and decontamination facility shall remain in place and be utilized.

   b. Second Cleaning:

      (1) After the first cleaning, the Work Area shall be vacated for twelve hours to allow fibers to settle.

      (2) All objects and surfaces in the Work Area shall be HEPA - vacuumed and wet cleaned for a second cleaning.

(3) A thin coat of lockdown encapsulant shall be applied to all plastic covered surfaces in the Work Area.

(4) When the encapsulant is dry, second layer of polyethylene sheeting on the walls, ceiling and floors shall be removed. Do not remove seals from doors, windows, Isolation Barriers or disconnect the negative pressure equipment.

c. Third Cleaning:

(1) A minimum of four hours after the second cleaning, all the surfaces in the Work Area shall be HEPA-vacuumed and wet cleaned for a third cleaning.

(2) Upon the request of the Contractor, the Third-Party Air Monitor will do final visual inspection for re-occupancy. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.

(3) When the Work Area passes the Third-Party Air Monitor's visual re-occupancy inspection, air sampling shall not begin until at least one hour after the completion of the third cleaning. The Third-Party Air Monitor shall perform air monitoring using aggressive testing techniques. The Third-Party Air Monitor will approve re-occupancy if the specified fiber count in the Work Area is achieved according to the Third-Party Air Monitor.

(4) When the Work Area passes the re-occupancy test, all controls and seals established shall be removed.

(5) The cleaned layer of the surface barriers shall be removed from walls and floors.

(6) The isolation barriers shall remain in place throughout cleanup. Decontamination enclosure systems shall remain in place and be utilized. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

d. Final Barrier Removal:

(1) Upon receipt of acceptable clearance testing results, polyethylene sheeting and Isolation Barriers shall be removed and disposed accordingly as asbestos-containing material.

(2) The area surrounding the abatement work place shall be cleaned of any visible debris utilizing HEPA vacuum and wet methods.

e. The Third-Party Air Monitor will conduct a final visual observation. Approval must be granted prior to break down of decontamination facility and contractor demobilization.

C. Removal of ACM utilizing NYCDEP Title 15, Chapter 1 §1-109: Abatement from Vertical Exterior Surfaces shall be as follows:

1. Preparation procedures:

a. This procedure shall apply to the abatement of asbestos-containing materials from vertical exterior surfaces of a building or structure.

b. The entire surface to be abated and ground-level perimeter shall be considered the work area unless partitions and warning tape are used to define the work area.

c. A restricted area shall be established using warning tape extending at least 25 feet from the affected areas of the building or to the nearest vertical obstruction or the curb.

d. The restricted area may be entered only by certified workers or authorized visitors.

e. Before plasticizing, the restricted area shall be inspected for ACM debris and, if necessary, pre-cleaned using HEPA vacuums and wet methods.

f. All openings to the building or structure's interior which are within 25 feet of the affected ACM shall be closed and sealed.

g. Scaffolding erected to access the ACM shall be constructed, maintained, and used in accordance with applicable federal, state, and city laws.

h. Horizontal surfaces beneath the affected ACM shall be covered with two layers of fire-retardant 6-mil plastic to a width of six feet.

i. Elevated platforms being used to access the affected ACM shall be plasticized with two layers of fire-retardant 6-mil plastic, which shall extend up from the platform to at least the height of the mid-rail on three sides, and shall be attached directly to the building just below the surfaces under abatement.

j. The ground-level restricted area shall be cleared of all moveable objects and plasticized with two sheets of fire-retardant 6-mil plastic, which shall be extended one foot up the side of the building. The plasticized area shall be ten feet wide for every floor up to a maximum width of thirty feet, or to the curb. This plastic shall be cleaned, replaced, and disposed of as asbestos waste at the end of each shift.

k. Sidewalk bridges in the restricted area shall be covered with two layers of fire retardant 6-mil plastic, placed over and secured to the bridge, spread across the full width, draped over the side to ground level, and extended to a width of at least thirty feet.

l. Establish a remote decontamination unit in accordance with Section 3.01 within the restricted area.

m. Construct all elevated work platforms a minimum of one foot below the surface to be abated.

n. Pre-Removal Inspections

(1) Prior to removal of any ACM, the Contractor shall notify the Project Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.

(2) Contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.

(3) Following the Project Monitor's approval of the Work Area preparations, removal of ACM may commence.

2. Removal of ACM Materials:

a. Mist material with amended water. Allow sufficient time for the amended water to penetrate the material to be removed.

b. Remove the caulk using hand tools such as knives or scrapers.

c. Exercise caution when removing caulking material to prevent damage to windows or skylight openings.

d. Remove any residual asbestos-containing caulking material from the substrate using wet cleaning methods and nylon-bristled hand brushes. The use of metal bristled brushes is prohibited.

e. Place the removed material immediately into a properly labeled 6-mil polyethylene bag. All material shall be properly containerized and decontaminated prior to removal from the Work Area.

f. Following the completion of removal of caulking, all visible residues shall be removed from the substrate.

g. Air sampling shall be conducted in compliance with NYC DEP Title 15 Chapter 1, §1-41 Air Sampling Schedule. This sampling shall be performed by the Third Party Air Monitoring Firm.

3. Following Removal of ACM :

a. The stripped substrate shall be HEPA vacuumed and wet-wiped.

b. A visual clearance inspection shall be conducted by the asbestos handler supervisor and project monitor after the work area dries, to ensure the absence of ACM residue or debris in the work area.

c. After the inspection is completed, the warning tapes and barriers may be removed.

d. The clearance inspection shall be documented in the log and the project air sampling log.

e. Air monitoring shall be conducted in accordance with relevant provisions.

f. Contractor shall request and pass a visual inspection performed by the consultant before proceeding to the next step. Documentation of passing this inspection shall be recorded in a daily logbook.

g. The Third-Party Air Monitor will conduct a visual observation of the Work Area to verify the absence of asbestos-containing waste materials.

h. If the Work is accepted by the Third-Party Air Monitor based on the inspection, Contractor shall be notified. Conduct the following activities in accordance with the contract and all applicable laws, codes, rules and regulations.

(1) All waste shall be removed from the Work Area and holding areas.

(2) All tools and equipment are to be removed and decontaminated in the decontamination enclosure system.

i. If the Work is not approved, the Third-Party Air Monitor will inform Contractor who will then HEPA-vacuum and/or wet-clean the Work Area. The Third-Party Air Monitor will then perform a subsequent visual observation. This process will continue until the Third-Party Air Monitor accepts the Work Area as clean.

j. Final Barrier Removal

(1) Upon receipt of acceptable observation results, polyethylene sheeting and barrier tape shall be removed and disposed accordingly as ACM.

(2) The area surrounding the abatement work place shall be cleaned of any visible debris utilizing HEPA vacuum and wet methods.

(3) The Third-Party Air Monitor will conduct final visual. Approval must be granted prior to break down of decontamination facility and contractor demobilization. Other Information: Extra time required to clean Work Areas in order to achieve clearance criteria shall not be considered grounds for an extension of time for contract completion.

D. Removal of ACM utilizing NYCDEP Title 15, Chapter 1 §1-107: Foam Procedure for Roof Removal shall be as follows:

1. Preparation procedures:

a. These procedures apply only to the removal of asbestos-containing roofing material (ACRM) from exterior roof surfaces. The work area on the roof shall be cordoned off with clearly visible barriers such as caution tape, and only authorized persons shall have access.

b. The foam or viscous liquid shall be non-toxic, shall not require special respiratory protection for handling, and shall not affect the handling and disposal of the waste.

c. The foam or viscous liquid shall coat and maintain a stable blanket (minimum 1" thickness) for the duration of the removal process and shall leave an identifiable colored residue when it dissipates.

d. The foam or viscous liquid shall wet the ACRM. The ACRM shall be kept wet through the bagging process.

e. Persons entering the work area shall wear correctly-fitting, good traction rubber boots.

f. Abatement shall not be carried out during adverse weather conditions (e.g. precipitation, high winds, ambient temperature below 32 degrees Fahrenheit, etc.).

g. The worker decontamination unit may be attached to each work area at an entry/exit from each work area, or may be remote, in which case it shall be equipped with an airlock at the entrance. In addition to the shower head(s), the shower room shall be equipped with a flexible hose for waste decontamination for removal of less than 1,000 square feet of ACRM. For 1,000 square feet or more of ACRM removal, a separate waste decontamination facility shall be located at an entry/exit from each work area. Remote holding areas for the asbestos containing waste shall comply with Title 16, Chapter 8, Rules of t\he City of New York (16 RCNY 8 et seq.)

h. Movable objects shall be removed from the work area, or kept in place and wrapped in one sheet of fire retardant 6 mil plastic sheeting.

i. Provisions shall be made to ensure a safe and adequate air supply to affected building(s). All vents, skylights, air intakes, windows and doors opening onto the roof, and all other openings shall be sealed with 2 layers of fire retardant 6 mil plastic or fitting with HEPA filters when appropriate. Temporary extensions may be installed to a height of 10 feet to ensure adequate air exchange instead of sealing vents, air intakes, etc, with 2 layers of plastic or HEPA filters. Drains may be equipped with 5 micron filtering system in lieu of being sealed.

j. Fixed objects including perimeter walls, bulkheads, cooling towers, ducts and other rooftop appurtenances shall be covered in one sheet of fire retardant 6 mil plastic up to a height of at least six feet.

k. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE INTERIOR SPACES BENEATH THE ROOF.

l. All office equipment and furniture, including but not limited to desks, chairs, computers, printers, cabinets, etc., carpeted and wooden floors shall be covered with one layer of 6- mil plastic sheeting.

m. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY

DAMAGE THAT MAY OCCUR IN THE INTERIOR SPACES, INCLUDING BUT NOT LIMITED TO OFFICE EQUIPMENT, FURNITURE, FLOORS, ETC., BENEATH THE ROOF DURING ALL PHASES OF THE ROOF ABATEMENT.

n. The Contractor shall provide temporary roof protection consisting of 10-mil polyethylene sheeting following abatement over the open roof areas. Strict coordination with the General Contractor, Construction Project Manager and/or Architect is required and necessary during this phase of abatement.

o. Preliminary examination shall be conducted and precautions shall be taken to prevent damage to the interior of the building, including but not limited to office equipment, furniture, carpeted and wooden floors, etc., and to ensure no adverse effect on the structural stability of the roof due to the abatement activity.

p. Abatement activities shall not be carried out during adverse weather conditions (e.g., precipitation, heavy winds, etc.).

q. The floor area between the remote decontamination facility and the Work Area must be protected with 2 layers of 6-mil. polyethylene sheeting suitably anchored.

r. Provisions shall be made to ensure a safe and adequate air supply to affected building(s). All vents, skylights, air intakes, windows and doors opening onto the roof, and all other openings are to be sealed with two layers of 6-mil plastic or fitted with HEPA-filters where appropriate. In lieu of sealing vents, air intakes, etc., with two layers of plastic or HEPA-filters, temporary extensions may be installed to a height of 10 feet to ensure adequate air exchange. Drains may be equipped with 5 micron filtering systems in lieu of being sealed.

s. Pre-Removal Inspections:

(1) Prior to removal of any ACM, the Contractor shall notify the Third-Party Air Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.

(2) Contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.

(3) Following the Third-Party Air Monitor's approval of the Work Area preparations, removal of ACM may commence.

2. Removal of ACM Roofing and Flashing Materials:

   a. The Contractor shall be responsible for the removal of all roofing components, including multiple layers of built-up membrane, tar, vapor barrier and/or flashing down to the substrate/deck.

   b. Prior to actual removal, the built-up roofing shall be blanketed and wetted with a minimum 1" coating of the acceptable foam or viscous liquid which shall be maintained for the duration of the removal until the material is bagged. The foam or viscous liquid shall be confined to the work area.

   c. Hand-held power tools used to drill, cut into, or otherwise disturb the ACRM shall be equipped with the HEPA-filtered local exhaust ventilation and operated to prevent potential fiber release.

   d. Abatement shall not be performed in adverse weather conditions (e.g., precipitation, heavy winds, etc.) Contractor shall protect all exposed roof during adverse weather conditions.

   e. Portable HEPA-vacuum machines shall be available during abatement.

      After the ACM removal and bagging, the bagged waste shall be HEPA-vacuumed, and then wet-cleaned and transferred into the shower room for double bagging. The double-bagged waste shall be transferred outside the clean room for its final transfer for storage in an enclosed waste container.

3. Following Removal of ACM Roofing and/or Flashing:

   a. Upon completion of the abatement in roof work area, clean-up procedures shall involve removal and bagging of:

   b. The asbestos containing roofing material (ACRM)

   c. Visible accumulations of asbestos containing waste

   d. All excess foam or similar viscous liquid

   e. All debris, and shall be followed by a thorough wet cleaning.

   f. All tools shall be wet cleaned and HEPA-vacuumed, and then removed from the work area upon completion.

   g. Following the removal of all debris, the work area shall be thoroughly

wet cleaned. The work area shall be allowed to dry completely before the visual inspection is conducted. The inspection shall confirm the absence in the work area of:

(1) ACM, debris, bagged ACM waste,

(2) Excess foam or other viscous liquid.

h. If the work area fails visual inspection, it shall undergo another wet cleaning and/or HEPA vacuuming until it passes the visual inspection.

i. When the visual inspection and clearance testing is successful, all plastic may be removed.

j. Air monitoring shall be conducted in accordance with the relevant provisions of Air sampling shall be conducted in compliance with NYC DEP Title 15 Chapter 1, §1-41 Air Sampling Schedule.

4.02 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS

A. Ensure that barriers are installed in a manner appropriate to the expected weather conditions during the project and for its duration. Repair damaged barriers and remedy defects immediately upon their discovery. Visually inspect barriers at the beginning and end of each work period.

B. Visually inspect non-Work Areas and the decontamination enclosure system for water leakage. Check the floor below, ceiling and walls, and view beneath/or around the decontamination enclosure system, for signs of leakage. Perform the visual inspection a minimum of two times for each 8-hour work shift.

PART 5 – ASBESTOS WASTE MANAGEMENT

5.01 ACM WASTE REQUIREMENTS

A. The Contractor and all sub-Contractors are specifically alerted to the illegal practice of combining asbestos-containing waste (ACW) from one project with the ACW of other projects without using the services of a permitted waste transfer station as defined by 6 NYCRR Part 360 and 364. As part of the shop drawing submittals, the Contractor must submit for approval the proposed method of transportation and disposal that will be utilized to manage the ACW of this Contract. If a permitted transfer station is to be used, the cost shall be included in the Bid price. The Contractor must submit a waste manifest consistent with whatever approved method is utilized as part of the invoicing and payment procedures.

B. The Contractor shall maintain compliance with the strictest set of regulations of Title 15, Chapter 1 of RCNY, NYC LL 70/85, NYS DOL ICR 56, USEPA, Asbestos Regulation 40 CFR Section 61.152, 29 CFR 1926.1101, 29 CFR 1910.1200 (F) of OSHA's Hazard Communication Standards, and other applicable standards.

NOTE: Any penalties incurred for failure to comply with any of the above regulations will be the sole responsibility for fines imposed due to negligence of the Contractor.

C. When presenting ACW for storage at the generation site, the Contractor shall:

1. Wet down ACW in a manner sufficient to prevent all visible emissions of dust into the air.
2. Seal material in a leak tight container while wet.
3. Keep ACW separate from any other waste.

D. When presenting ACW for storage away from the site of generation, the Contractor shall:

1. Ensure that ACW has been properly packaged as per requirements above.
2. Examine the containers of ACW to ensure that there are no breaks in the containers and that no visible dust is being released into the air.
3. If examination reveals damage to a container of ACW the Contractor or person accepting the waste shall immediately wet down the ACW and repackage it into a clean leak tight container. The subsequent repackaging shall be the financial responsibility of the Contractor and occur at no extra cost to the City.
4. Keep ACW separate from any other waste.

E. When storing ACW – The Contractor shall:

1. Ensure that the ACW has been sufficiently wetted down in tight containers.
2. Re-wet and repackage any damaged containers.
3. Maintain at storage site an adequate supply of spare leak tight containers.
4. Maintain at storage site an adequate supply of amended water.
5. Keep ACW separate from any other waste.
6. Keep ACW in a secured, enclosed, and locked container.

7. If the Contractor has intention of sorting a quantity of ACW greater than or equal to 50 cubic yards, the Contractor shall:

   a. Submit a written request and receive written approval from the City.

F. When presenting for transport, the Contractor shall:

1. Ensure that ACW has been sufficiently wetted down.

2. Examine the integrity of the container's airtight seal.

3. Re-wet and repackage any damaged containers.

4. Keep ACW separate from all other waste.

5. Ensure that a person transporting asbestos waste holds a valid permit issued pursuant to law.

6. Frequency of Waste Removal:

   a. Properly packaged and labeled asbestos waste shall be removed from the site on a daily basis. Under no circumstance shall asbestos waste be stored on site without written approval from the City. The Waste Hauler and landfill shall be as indicated on the notifications to regulatory agencies.

G. Waste Load-out Through Equipment Decontamination Enclosure (Full Decontamination Facility): Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick polyethylene sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA-vacuuming in a designated part of the Work Area. Move wrapped asbestos waste to the equipment washroom, wet clean each bag or object and place it inside a second disposal bag, or a second layer of 6-mil polyethylene sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight with tape.

1. The clean containerized items shall be moved to the equipment decontamination enclosure holding area pending load-out to storage or disposal facilities.

2. Workers who have entered the equipment decontamination enclosure system from the uncontaminated non-Work Area shall perform load-out of containers from the decontamination enclosure holding area. Dress workers moving asbestos waste to storage or disposal facilities in clean overalls of a color different than from that of coveralls used in the Work Area. Ensure that workers do not enter from uncontaminated areas into the equipment

washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the equipment decontamination enclosure system.

3. Thoroughly clean the equipment decontamination enclosure system immediately upon completion of the waste load-out activities, and at the completion of each work shift.

4. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Any materials placed in labeled containers or bags, including those turned "inside-out", shall be handled and disposed of as ACM waste.

H. All asbestos materials, wastes, shower water, polyethylene, disposable equipment and supplies shall be disposed of as asbestos contaminated waste, in accordance with the EPA regulation (40 CFR, Section 61.150) and those requirements of the New York Department of Environmental Conservation and New York City Department of Sanitation.

I. All asbestos materials shall be prepared for transportation in accordance with this specification and all applicable Federal, State, County and City Regulations. Contractor shall submit the following documentation:

1. Where applicable, an EPA Generator's identification number which has been obtained from the EPA for all asbestos waste generated from the project.

2. Applicable State Waste Hauler license and registration numbers.

3. Federal Hazardous Materials Waste Hauler number.

4. Designated landfill EPA Permit numbers.

J. Prior to loading asbestos waste the enclosed cargo areas (dumpster) shall be prepared as follows:

1. Clean via HEPA-vacuum and wet wipe techniques the enclosed cargo areas of all visible debris prior to preparing with polyethylene.

2. Line the cargo area with two layers of 6-mil polyethylene sheeting to prevent contamination from damaged or leaking containers. Floor sheeting shall be installed first and extend up the walls a minimum of 24-inches. Wall sheeting shall be overlapped and taped securely into place.

K. Asbestos-containing waste shall be placed on level surfaces in the cargo area of the dumpster and shall be packed tightly to prevent any shifting or tipping of the waste during transportation.

L. Asbestos-containing waste shall not be thrown into or dropped from the dumpster. All material shall be handled carefully to prevent rupture of the containers.

M. All personnel engaged in handling and loading of asbestos contaminated waste outside of the Work Area shall wear protective clothing. The disposable clothing shall include head, body and foot protection and color of clothing shall be different from abatement personnel in the Work Area. Minimum respiratory protection shall be half face, dual cartridge, air purifying respirators with HEPA-filters.

N. Contractor shall immediately clean debris or residue observed on containers or surfaces outside of the Work Area. Cleaning shall be via HEPA equipped wet/dry vacuums only.

O. All asbestos-containing waste shall be transported from the abatement site to the landfill by a registered Waste Hauler. When transporting ACW:

1. Ensure that the ACW has been sufficiently wetted down in a leak tight container.

2. Re-wet and repackage any damaged containers.

3. Maintain at storage site an adequate supply of spare leak tight containers.

4. Maintain at storage site an adequate supply of amended water.

5. Keep ACW separate from any other waste.

P. Keep ACW in a secured, enclosed, and locked container.

Q. Waste transport documents shall conform to the requirements of the U.S. Department of Transportation, Hazardous Materials Transportation Regulation, 49 CFR Part 173 and EPA 40 CFR 61.150 (d)(1)(2). Shipping documents shall be clearly marked with the required designation "RQ Asbestos". Contractor shall provide a copy of this document to the City.

R. A uniform hazardous waste manifest shall be prepared by the Contractor and signed by the Contractor each time the Contractor ships a dumpster load of Asbestos-Containing Waste Material. The uniform hazardous waste manifest shall include the site of waste generation, the names and addresses of the Transporter, the Contractor, and the landfill operator with information on the type and number of asbestos-waste containers, time and date. Contractor shall provide the Construction Project Manager, Third-Party Air Monitor or authorized designated representative with signed copies of the waste manifest before each departure.

S. Contractor or his registered hazardous Waste Hauler shall transport asbestos-containing waste material from the abatement site directly to the specified disposal site. Contractor or their Waste Hauler shall not accept material from any other site when transporting asbestos-containing waste material from the abatement site. The authorized DDC representative or Construction Project Manager reserves the right

to travel with Contractor's Waste Hauler to the waste disposal site. No intermediate storage of waste material (i.e., Contractors warehouse) shall be permitted.

T. Final or progress application for payments will not be processed unless all hazardous waste manifests generated to date have been received and reviewed by the Construction Project Manager.

U. All asbestos materials, wastes, shower water, polyethylene disposable equipment and supplies shall be disposed of as asbestos contaminated waste, in accordance with the EPA regulation (40 CFR, Section 61.150) and those requirements of the New York State Department of Environmental Conservation and the New York Department of Sanitation.

V. Contractor shall transport all sealed drums to a landfill disposal site approved by the Department of Environmental Conservation and the EPA. Transportation shall be performed by a New York State registered Waste Hauler, where required. When presenting the ACW for disposal the Contractor or sub Contractor shall:

1. Ensure that waste container is properly labeled according to the National Emission Standard for Hazardous Air Pollutants (NESHAP); Asbestos Revision, 40 CFR, Part 61, Subpart M. The labels shall include the name of the waste generator and the location where the waste was generated.

2. Comply with all applicable orders issued pursuant to asbestos disposal.

3. Ensure that ACW has been sufficiently wetted down.

4. Re-wet and repackage any damaged containers.

5. Keep ACW separate from all other wastes.

W. Contractor shall notify the waste disposal site, at least 24 hours prior to transportation of asbestos contaminated waste to be delivered. Contractor shall determine if a larger notification period is required.

X. At the site Contractors or Waste Hauler trucks shall approach the dump location as close as possible for unloading asbestos waste. Containers shall be carefully placed in the ground. Do not throw containers from truck.

Y. Contractor or Waste Hauler shall inspect containers as they are unloaded at the disposal site. Material in damaged containers shall be repacked in empty containers, as necessary.

Z. Contractor or Waste Hauler shall not remove asbestos-containing waste Material from drums unless required to do so by the disposal site City. Used drums shall be disposed of as asbestos-asbestos contaminated waste.

AA. All personnel engaged in unloading of the containers at the waste site shall wear protective clothing. The disposable clothing shall include head, body and foot protection. Minimum respiratory protection shall be half face, dual cartridge, air purifying respirators with HEPA-filters. Workers shall remove their protective clothing at the disposal site, place it in labeled disposal bags and leave them with the deposited waste shipment.

BB. For the compaction operation, the Contractor shall ensure that disposal sites personnel have been provided with personal protective equipment by the disposal operator. If the disposal site City has not provided this protective equipment, the Contractor shall supply protective clothing and respiratory protection for the duration of this operation (PAPR respirators are mandatory).

CC. If containers are broken or damaged, the Contractor or Waste Hauler shall, using personnel who are properly trained and wearing proper protective equipment, shall repackage the waste in properly labeled containers. Contractor shall then clean the entire truck and its contents using HEPA-vacuums and wet cleaning techniques until no visible residue is observed.

DD. Following the removal of all containerized waste, the Contractor shall decontaminate the truck cargo area using HEPA-vacuums and/or wet cleaning techniques until no residue is observed. All 6-mil polyethylene sheeting shall be removed and discarded as asbestos-containing waste material along with contaminated cleaning material and protective clothing, in containers at the disposal site.

EE. The transporter(s) of all asbestos waste shall not back-haul any items on his return from landfill/disposal site.

FF. All asbestos waste shall be disposed of in an approved Asbestos Landfill site only.

1. NO PERSON UNDER ANY CIRCUMSTANCES SHALL ABANDON ACW. The same shall be disposed of only by certified persons in approved landfills.

2. A manifest form will be signed by the Landfill documenting receipt and acceptance of the asbestos-containing waste. This manifest will be furnished to the City of New York within thirty calendar days from the project completion date.

3. It is the responsibility of the Asbestos Contractor to determine current waste handling, transportation and disposal regulations for the work site and for each waste disposal landfill. The Asbestos Contractor must comply fully with these regulations and all appropriate U.S. Department of Transportation, EPA and other Federal, State and Local entities' regulations and all other current legal requirements.

4. The Asbestos Contractor shall obtain an agreement from the transporter (s) that the practice of "Back-Hauling" will not be engaged in, with respect to any and all waste loads taken from this site during the work.

5. The Asbestos Contractor will document actual disposal of the waste at the designated landfill by having completed a Disposal Certificate and will provide a copy of the same to the Department of Design and Construction.

PART 6 – ACCEPTANCE

6.01 ACCEPTANCE

Upon satisfactory completion of all decontamination procedures, a certificate will be issued by the Construction Project Manager with copies to all parties.

A. A letter of Compliance stating that all the work on the project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations.

B. All warranties as stated in the Specifications.

END OF SECTION 028213

SECTION 03 30 00

CAST IN PLACE CONCRETE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this section includes all labor, materials, equipment and services necessary to complete the concrete work as shown on the drawings and specified herein, including, but not limited to the following:
   1. Foundation systems including topping slabs, walls, beams, piers, pilasters, footings, pits and the like.
   2. Structural slabs on metal deck.
   3. Furnishing and installing all required anchors and inserts.
   4. Placing in the forms all inserts, anchors, anchor bolts, bearing plates and the like furnished by other trades for casting into the concrete and cleaning of same after stripping of forms.
   5. Protection of all inserts, anchors, hangers, sleeves and supports furnished and set by others for the attachment of other work to the concrete, or required to permit the passage of other work through the concrete.
   6. Supply, fabricate and place all required reinforcing bars, mesh and other reinforcement for concrete where shown, called for, and/or required complete with proper supporting devices.
   7. Erection and removal of all formwork and forms required to properly complete the work.
   8. Finishing of all concrete work as hereinafter specified.
   9. Curing and protection of all concrete and cement work.
   10. Floor sealers and dustproofing of all areas exposed.
   11. Cutting, patching, grouting, repairing and pointing up as required.
   12. Waterproofing.
   13. Grouting of all beam bearing plates and column base plates.
   14. Embedded plates in all foundation walls.
   15. Equipment pads as required.
   16. All other work and materials as may be reasonably inferred and needed to make the work of this section complete.

1.3 RELATED WORK

A. Masonry work.
B. Structural steel.
C. Metal deck.
D. Miscellaneous metal work.
E. Carpentry.
F. Waterproofing.

1.4 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like.

Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F".

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by the Commissioner.
B. Shop Drawings; Reinforcement: Submit original shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Details and Detailing of Concrete Reinforcement" showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures. The shop drawings shall be prepared only by competent detailers, checked by the contractor prior to submission.
    1. The shop drawings shall show construction, contraction and isolation joint locations and the added reinforcement required at same.
    2. Obtain and coordinate information for sleeves and openings in concrete, which are required for the work of other trades. Make coordinated drawings showing size and location of openings and sleeves and incorporate this information on the reinforcing drawings.
    3. Only those splices indicated on the approved shop drawings will be permitted.
    4. Provide elevations of all foundation walls and other structural elements to a minimum 1/4" scale.
C. Samples: Submit samples of materials as requested by the Commissioner, including names, sources and descriptions.
D. Laboratory Test Reports: Submit laboratory test reports for concrete materials, mix design test.
E. Material Certificates: Provide materials certificates in lieu of materials laboratory test reports when permitted by the Commissioner. Manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements should sign material certificates. Provide certification from admixture manufacturers that chloride content complies with specification requirements.
F. Shop Drawings Formwork: Submit shop drawings for fabrication and erection of specific finished concrete surfaces. Show form construction including jointing, special form joint or reveals, location and pattern of form tie placement, and other items that affect exposed concrete visually. The Commissioner's review is for general architectural

applications and features only. Design of formwork for structural stability and efficiency is Contractor's responsibility.

1.5 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:
   1. New York City Building Code
   2. ACI 117-90 "Standard Specifications for Tolerances for Concrete Construction and Materials".
   3. ACI 301-99 "Specifications for Structural Concrete for Buildings".
   4. ACI 214, "Recommended Practice for Evaluation of Strength Test Results of Concrete."
   5. ACI 311, "Guide for Concrete Inspections".
   6. ACI 315, "Details and Detailing of Concrete Reinforcement".
   7. ACI 318-02 "Building Code Requirements for Structural Concrete".
   8. ACI 211.1-91 "Standard Practice for Selecting Proportions for Normal, Heavyweight and mass concrete".
   9. ACI 211.2, "Guide for Selecting Proportions for No Slump Concrete".
   10. ACI 304, "Guide for Measuring, Mixing, Transporting and Placing Concrete".
   11. ACI 302. 1R-96 Guide for Concrete Floor and Slab Construction.
   12. ACI 305 R-99 Hot Weather Concreting.
   13. ACI 306 R-97 Cold Weather Concreting.
   14. ACI 308-97 Standard Practice for Curing Concrete.
   15. ACI 347 R-99 "Guide to Formwork of Concrete".
   16. ACI 309, "Guide for Consolidation of Concrete".
   17. CRSI-WCRSI, "Placing Reinforcing Bars".
   18. AWS D1.4, "Structural Welding Code Reinforcing Steel".
   19. The ACI Field Reference Manual, SP-15 shall be kept at the job site, and the practices set forth therein shall be strictly adhered to.
   20. ASTM C 494 Standard Specification for Chemical Admixtures for Concrete.
   21. Concrete Reinforcing Steel Institute, (CRSI) "Manual of Standard Practice".

B. Concrete Testing Service: City of New York will engage a testing laboratory acceptable to the Commissioner to perform material evaluation tests and to design concrete mixes.

C. Materials and installed work may require testing and retesting at anytime during progress of work. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.

1.6 PROJECT CONDITIONS

A. The contractor, before commencing work, shall examine all adjoining work on which this work is in any way dependent for proper installation and workmanship according to the intent of this specification, and shall report to the Commissioner/Engineer any condition that prevents this contractor from performing first class work.

B. Protection of Footings Against Freezing: Cover completed work at footing level with sufficient temporary or permanent cover as required to protect footings and adjacent subgrade against possibility of freezing; maintain cover for time period as necessary.

C. Protect adjacent finish materials against spatter during concrete placement.

D. Provide all barricades and safeguards at all pits, holes, shaft and stairway openings, etc., to prevent injury to workmen and others within and about the premises. Also provide all safeguards as required by the Building Code, OSHA, or any other departments having jurisdiction. Take full responsibility for all safety precautions and methods.
E. Procedure of Work: The contractor shall keep himself constantly informed as to the progress of the work in the field, materials and men ready to start work immediately when conditions of preceding work are available or ready, wholly or in part, so as not to delay the progress of building work or to interfere with the progress of work of other contractors, and in any event he shall, within 24 hours after notice from the City of New York, proceed with such work as directed to maintain the uninterrupted progress of the work.

1.7 GUARANTEE

Upon completion of all work to be performed under this contract and acceptance of same by the City of New York, the contractor shall execute and deliver in a form satisfactory to the City of New York, a guarantee that all workmanship and materials used in the performance of the contract shall remain free from defects for a period of three years from the date of the final certificate of occupancy.

1.8 PRE-CONCRETE CONFERENCE

A. At least 35 days prior to the start of the concrete construction schedule, the contractor shall conduct a meeting to review the proposed mix designs and to discuss the required methods and procedures to achieve the required concrete construction. The contractor shall send a pre-concrete conference agenda to all attendees 20 days prior to the scheduled date of the conference.
B. The contractor shall require responsible representatives of every party who is concerned with the concrete work to attend the conference, including but not limited to the following:
   1. Contractor's superintendent - Laboratory responsible for the concrete design mix - Laboratory responsible for field quality control - Concrete subcontractor - Ready-mix concrete producer - Admixture manufacturer(s) - Concrete pumping equipment manufacturer.
C. Minutes of the meeting shall be recorded, typed and printed by the contractor and distributed by him to all parties concerned within 5 days of the meeting. One copy of the minutes shall also be transmitted to the following for information purposes: The Commissioner - Resident engineer - Consultant engineer.
D. The minutes shall include a statement by the concrete contractor indicating that the proposed mix design and placing can produce the concrete quality required by these specifications.
E. A minimum of a 4 cubic yard trial mixture containing all required admixtures shall be placed at the job site using the accepted methods of placing, finishing and curing. All applicable tests including slump, strengthen, air content, permeability, and air content will be performed. This shall occur at least four week before actual concreting operations with particular admixture begins. The admixture manufacturer(s) and inspectors shall be present. The same testing should be done in the laboratory at the same time for comparison. A test sample should be done for each condition that is to be placed.
F. The Commissioner will be present at the conference. The Contractor shall notify the Commissioner at least 10 days prior to the scheduled date of the conference.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct of plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient strength and thickness to withstand pressure of newly placed concrete without bow or deflection.
   1. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better mill oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. Form Coatings: Provide VOC compliant commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

D. Form Ties: Form ties and spreaders: prefabricated assemblies by Richmond; Superior, Dayton or approved equal. Wire ties SHALL NOT BE USED. Ties for foundation work shall be of snap design with removal cones and water seal washer.

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 60, and deformations ASTM A305.

B. Galvanized Reinforcing Bars: ASTM A 767, Class II (2.0 oz. zinc psf) Class I (3.0 oz. zinc psf) hot-dip galvanized, after fabrication and bending.

C. Epoxy-Coated Reinforcing Bars: ASTM A 775 (as noted on plan and/or in section).

D. Steel Wire: ASTM A 82, plain, cold-drawn steel.

E. Welded Wire Fabric: ASTM A 185, welded steel wire fabric,

F. Welded Deformed Steel Wire Fabric: ASTM A 497.

G. Supports for Reinforcement: Bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications.
   1. For epoxy-coated reinforcement provide plastic protected chairs and plastic ties. All imperfections in the epoxy coating are to be repaired prior to placement of concrete.
   2. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class I) or stainless steel protected (CRSI, Class 2), at a spacing not to exceed 4'-0" on center in either direction.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.
   1. Use one brand of cement throughout project, unless otherwise acceptable to the Commissioner.

B. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete.

1. Local aggregates not complying with ASTM C 33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Commissioner.
2. Normal weight Fine Aggregate: washed, inert, natural or manufactured or combination thereof, sand conforming ASTM C33 gradation.
3. Normal weight Coarse Aggregate: well graded crushed stone or washed gravel conforming to ASTM C33, sizes 57 for foundations and 67 for slabs and structure.

C. Lightweight Aggregates: ASTM C 330.

D. Water: Drinkable.

E. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. "Air-Mix or AEA 92": Euclid Chemical Co.
      b. "MB-VR or MB-AE": Master Builders.
      c. "Sika Aer": Sika Corp.
      d. "Darex AEA" or "Daravair": W.R. Grace.

F. Water-Reducing Admixture: ASTM C 494, Type A, and containing not more than 0.05 percent chloride ions.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. "Eucon WR-75, WR-89 or MR": Euclid Chemical Co.
      b. "Pozzolith 322N": Master Builders.
      c. "Plastocrete 160": Sika Chemical Corp.
      d. "WRDA Hycol": W.R. Grace.

G. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F or Type G and containing not more than 0.05 percent chloride ions.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. "Eucon 37, 1037 or Plastol 5000": Euclid Chemical Co.
      b. "Rheobuild 1000": Master Builders
      c. "Sikament 300": Sika Chemical Corp.
      d. "Daracem-100": W. R. Grace

H. Water-Reducing, Retarding Admixture: ASTM C 494, Type D, and contain not more than 0.05 percent chloride ions.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. "Eucon Retarder 75": Euclid Chemical Co.
      b. "Pozzolith 100XR": Master Builders.
      c. "Plastiment": Sika Chemical Co.
      d. "Daratard": W.R. Grace.

I. Prohibited Admixtures: Calcium chloride, thyocyanates or admixtures containing more than 0.05 percent chloride ions are not permitted.

J. Certification: Written conformance to the above-mentioned requirements and the chloride ion content of admixtures will be required from the admixture manufacturer prior to mix design review by the Commissioner.

K. Contractor will be required to provide information demonstrating successful use in prior placement involving all admixtures.

2.4 RELATED MATERIALS

A. Waterstops: Provide water stops at construction joints and other joints as indicated Size to suit joints.

1. Bentonite Waterstops: Extruded 25% butyl rubber and 75% sodium bentonite in formed strips, series RX-101 and RX-102 waterstops by CETCO or approved equal.

B. Granular Base: Minimum ¾" diameter crushed blue stone to provide, when compacted, a smooth and even surface below slabs on grade and mud slabs that are being placed below hydrostatic slabs.

C. Non-Shrink, Non-Metallic Grout: The non-shrink grout shall be a factory pre-mixed grout and shall conform to ASTM C1107, "Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrink)." In addition, the grout manufacturer shall furnish test data from an independent laboratory indicating that the grout when placed at a fluid consistency shall achieve 95% bearing under a 4' x 4' base plate.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. "Euco-NS": Euclid Chemical Co.
      b. "Five Star Grout": U.S. Grout Corp.
      c. "Masterflow 713": Master Builders.

D. High Flow Grout: Where high fluidity and/or increased placing time is required, use high flow grout. The factory pre-mixed grout shall conform to ASTM C1107, "Standard Specification for Packages Dry, Hydraulic-Cement Grout (Non-shrink)." In addition, the grout manufacturer shall furnish test data from an independent laboratory indicating that the grout when placed at a fluid consistency shall achieve 95% bearing under a 18" x 36" base plate.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. "Euco Hi-Flow Grout" Euclid Chemical Co.
      b. "Masterflow 928" Master Builders

E. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.

F. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.
   1. Waterproof paper.
   2. Polyethylene film.
   3. Polyethylene-coated burlap.

G. Curing Compounds
   1. Clear Curing and Sealing Compound (VOC Compliant - 350 g/L): The compound shall have 30% solids content minimum, and will not yellow under ultra violet light after 500 hours of test in accordance with ASTM D4887 and will have a maximum moisture loss of 0.039 grams per sq. cm. when applied at a coverage rate of 250 sq. ft. per gallon.
      a. Products: Subject to compliance with requirements, provide one of the following:
         1) "Super Rez Seal VOX" Euclid Chemical Co.
         2) "Super Diamond Clear VOX" Euclid Chemical Co.
         3) "MasterKure 200W" Master Builders.
   2. Curing Compound (Strippable): The compound shall conform to ASTM C 309. For use on slabs receiving a subsequent finish and as noted on the drawings.
      a. Products: Subject to compliance with requirements, provide one of the following:
         1) "Kurez DR VOX or Kurez W VOX": Euclid Chemical

H. Crack Sealer: Elastomeric liquid crack sealer resistant to water, gasoline, oil and salts.
   1. Products: Subject to compliance with requirements, provide one of the following:

a. "Plasti-seal": Euclid Chemical Co.

I. Bonding Admixture: The compound shall be a latex, non-rewettable type.
1. Products: Subject to compliance with requirements, provide one of the following:
a. "Flex-Con": Euclid Chemical Co.
b. "Daraweld C: W.R. Grace
c. "SBR Latex" Euclid Chemical Co.

J. Vapor Barrier: Provide vapor barrier which conforms to ASTM E1745, Class A or B. The membrane shall have a water-vapor permeance rate no greater than 0.012 perms when tested in accordance with ASTM E154, Section 7. The vapor barrier shall be placed over prepared base material where indicated below slabs on grade. Vapor barrier shall be no less than 10 mil thick in accordance with ACI 302.1R-96.
1. Products: Subject to compliance with requirements, provide one of the following:
a. "Stego Wrap (15 mil) Vapor Barrier": Stego Industries LLC
b. "Griffolyn Vaporguard": Reef Industries
c. "Premoulded Membrane with PLASTMATIC CORE":W.R. Meadows.

K. Liquid Sealer/Densifier: High performance, deeply penetrating concrete densifier; odorless, colorless, VOC - compliant, non-yellowing siliconate based solution designed to harden, dustproof and protect concrete floors subjected to heavy vehicular traffic and to resist black rubber tire marks on concrete surfaces. The compound must contain a minimum solids content of 20% of which 50% is siliconate.
1. Products: Subject to compliance with requirements, provide one of the following:
a. "Euco Diamond Hard" Euclid Chemical Co.
b. "Seal Hard" L & M Chemical Co.

2.5 PROPORTIONING AND DESIGN OF MIXES

A. Preparation of Design Mixes:
1. Form TR-3: 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 Building requirements, for each concrete design mix.
2. All mix designs shall be proportioned in accordance with Section 5.3, "Proportioning on the Basis of Field Experience and/or Trial Mixtures" of ACI 318-02 and prepared by a licensed testing laboratory approved by the City of New York, but paid for by the contractor. If previously used mixes are submitted, all materials shall be from the same sources and with the same brand names as the previously utilized mix.
3. If trial batches are used, the mix design shall be prepared by an independent testing laboratory and shall achieve an average compressive strength 1200 psi higher than the specified strength. This over-design shall be increased to 1400 psi when concrete strengths of 5000 or more are used.
4. The proposed mix designs shall be accompanied by complete standard deviation analysis or trial mixture test data.

B. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
   1. Concrete for precast slabs, precast beams, structural topping slab, caisson caps, poured in place slabs and grade beams, columns and walls, over water, on ground or exposed to weather, shall have a compressive strength of 5000 psi at 28 days and a water cement ratio not greater than 0.40 and shall be watertight with high range water reducing agent, microsilica admixture,structural fibers, synthetic fibers, air-entraining admixture and corrosion inhibitor and shall be moist cured with a moisture-retaining cover per section 2.4G.
   2. Concrete for caissons shall have a compressive strength of 5000 psi or 7000 psi at 28 days as specified in the caisson schedule in the structural drawings and a water cement ratio not greater than 0.40 shall be watertight with high range water reducing agent, microsilica admixture, structural fibers, synthetic fibers, air entraining admixture and corrosion inhibitor and shall be moist cured with a moisture-retaining cover per section 2.4 G.
   3. Concrete on Metal Deck: Concrete on metal deck shall have a minimum ultimate compressive strength of 3000 psi, and shall *contain* welded wire fabric and shall have air entraining admixture. Concrete shall contain a high range water reducing agent (Superplasticizer) if pumped.
   4. Self-Consolidating Concrete (SCC): Minimum flow of 20" or as required by the successful test placement. All self-consolidating concrete shall contain the specified high-range water-reducing admixture and viscosity-enhancing admixture as required.
   5. "Quick Dry" Concrete: Maximum W/cm - 0.40, superplasticized, 3% maximum air content. The floor finish shall be as required by the manufacturer of the specified floor coating or covering.

C. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to City of New York and as accepted by the Commissioner. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Commissioner before using in work.

D. Admixtures:
   1. Use water-reducing admixture or high range water-reducing admixture (superplasticizer) in all concrete as required for placement and workability.
   2. Use non-corrosive, non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50°F (10°C).
   3. Use high-range water-reducing admixture in pumped concrete, concrete for industrial slabs, architectural concrete, parking structure slabs, fiber concrete, concrete required to be watertight, concrete with ultimate strength of 5,000 psi or more, and concrete with water/cement ratios below 0.50.
   4. Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus-or-minus 1-1/2 percent within following limits:
      a. Concrete structures and slabs exposed to freezing and thawing deicer chemicals, or subjected to hydraulic pressure:
         1) 4.5 percent (moderate exposure); 5.5 percent (severe exposure) - 1-1/2" max. aggregate

2) 4.5 percent (moderate exposure); 6.0 percent (severe exposure) - 1" max. aggregate.
3) 5.0 percent (moderate exposure); 6.0 percent (severe exposure) - 3/4" max. aggregate.
4) 5.5 percent (moderate exposure); 7.0 percent (severe exposure) - 1/2" max. aggregate.

b. Other Concrete: (not exposed to freezing, thawing, or hydraulic pressure): 2 percent to 4 percent air.
c. Interior concrete subjected to vehicular traffic: 3 percent maximum.

5. Use admixtures for water-reducing and set-control in strict compliance with manufacturer's directions.

E. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
1. Subjected to freezing and thawing; W/C 0.50.
2. Subjected to deicers/watertight: W/C 0.45.
3. Reinforced concrete subjected to brackish water, salt spray or deicers; W/C 0.40.

F. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
1. Ramps slabs and sloping surfaces: Not more than 3".
2. Reinforced foundation systems, including mud slabs below hydrostatic slabs: Not less than 1" and not more than 3".
3. Concrete containing HRWR admixture (superplasticizer): Not more than 9" unless otherwise approved by the Commissioner. The concrete shall arrive at the job site at a slump of 2" to 3" (3" to 4" for concrete receiving a "shake-on" hardener or lightweight concrete), be verified, then the high-range water-reducing admixture added to increase the slump to the approved level.
4. Other Concrete: Not less than 1" or more than 4".

2.6 CONCRETE MIXING

A. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.

B. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

C. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required. When air temperature is between 85°F (30°C) and 90°F (32°C), reduce maximum mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90°F (32°C), reduce maximum mixing and delivery time to 60 minutes.

D. No water shall be added after mixing to concrete containing HRWR (Superplasticizer). If loss of slump occurs, the concrete treated with HRWR may be re-dosed as long as a "flash set" has not occurred. Re-dosage procedures must be discussed and approved by the Commissioner and the manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.

3.2 INSPECTION

A. Examine all work prepared by others to receive work of this section and report any defects affecting installation to the contractor for correction. Commencement of work will be construed as complete acceptance of preparatory work by others.

3.3 CONCRETE

A. Concrete shall develop the minimum compressive strengths shown on drawings at 28 days when sampled and tested in accordance with ASTM C31 and C39 with the maximum slump in accordance with the approved mix design.

B. Concrete shall be in accordance with the requirements and specifications of NY City Building Code and ACI 318 - "Building Code Requirements for Structural Concrete", latest edition, as modified by the NY City Building Code.

3.4 FORMS

A. Design, erect, support, brace and maintain formwork to support vertical and lateral, static, and dynamic loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shapes, alignment, elevation and position. Maintain formwork construction tolerances complying with ACI 347. Provide Class A tolerances for concrete exposed to view. Provide Class C tolerances for other concrete surfaces.

B. Design formwork to be readily removable without impact, shocks or damage to cast-in-place concrete surfaces and adjacent materials.

C. Construct forms to size shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back- up at joints to prevent leakage of cement paste.

D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, recesses, and the like, to prevent swelling and for easy removal.

E. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

F. Chamfer exposed corners and edges as indicated, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

G. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.

H. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retightening forms and bracing after

concrete placement is required to eliminate mortar leaks and maintain proper alignment.

3.5 VAPOR BARRIER INSTALLATION

A. Following leveling and tamping of granular base for slabs on grade, place vapor barrier sheeting with longest dimension parallel with direction of pour.
B. Lap joints 6" and seal with appropriate tape.
C. After placement of moisture barrier, cover with granular material and compact to depth as shown on drawings.
D. Avoid cutting or puncturing vapor barrier during reinforcement placement and concreting operations.

3.6 PLACING REINFORCEMENT

A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.
B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials, which reduce or destroy bond with concrete.
C. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
D. Place reinforcement to obtain at least minimum coverage's for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.
F. Epoxy-coated reinforcing bars supported from formwork shall rest on coated wire bar supports. Reinforcing bars used as support bars shall be epoxy-coated. In walls having epoxy-coated reinforcing bars, spreader bars where specified by the Commissioner, shall be epoxy-coated. Proprietary combination bar clips and spreaders used in walls with epoxy-coated reinforcing bars shall be made of corrosion-resistant material.
G. Epoxy-coated reinforcing bars shall be fastened with nylon-, epoxy-, orplastic-coated tie wire, or other acceptable materials.
H. Repair of damaged epoxy-coating when required, damaged epoxy-coating shall be repaired with patching material conforming to ASTM A 775. Repair shall be done in accordance with the patching material manufacturer's recommendations.
I. Unless permitted by the Commissioner, epoxy-coated reinforcing bars shall not be cut in the field. When epoxy-coated reinforcing bars are cut in the field, the ends of the bars shall be coated with the same material used for repair of coating damage.

3.7 JOINTS

A. Construction Joints: Locate and install construction joints as indicated, or if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to the Commissioner.

B. Provide keyways at least 1-1/2" deep in construction joints in walls, slabs and between walls and footings, where noted; accepted bulkheads designed for this purpose may be used for slabs.
C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints, except as otherwise indicated.
D. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions, using manufacturer's specified welding irons.
E. Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs-on-ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated.
F. Contraction (Control) Joints in Slabs-on-Ground: Maximum joint spacing shall be 36 times the slab thickness unless otherwise noted on the drawings. The dry cut saw shall be used immediately after final finishing and to a depth of 1-1/4". Alternatively, a conventional saw shall be used as soon as possible without dislodging aggregate and to a depth of 1/4 slab thickness.

3.8 INSTALLATION OF EMBEDDED ITEMS
A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.
B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.
C. Embedded Plates at Foundation Walls: Install plate at top of forms so that exterior face of steel plate is level and plumb. Use construction documents for locations, sizes and elevations.

3.9 PREPARATION OF FORM SURFACES
A. Clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition.
B. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.
C. Thin form-coating compounds only with thinning agent of type, and amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in- place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
D. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.10 CONCRETE PLACEMENT
A. Ready-mix concrete shall comply with the requirements of ASTM C94 and ACI 304. All plant and transporting equipment shall comply with the

concrete plant standards and truck mixer and agitator standards of the National Ready Mix Concrete Association.

B. Cold weather mixing procedures shall be submitted to the Commissioner for approval.

C. Notify the Commissioner and testing organization at least 36 hours (1 1/2 regular working days) before each pour so that forms and reinforcing may be examined. Do not place concrete until inspection has been made or waived.

D. Preplacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.
   1. Apply temporary protective covering to lower 2' of finished walls adjacent to poured floor slabs and similar conditions, and guard against spattering during placement.

E. General: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

F. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 18" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints. Use internal vibrators penetrating both the top and preceding layers.

G. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

H. Use and type of vibrators shall conform to ACI 309 "Recommended Practice for Consolidation of Concrete". Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

I. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

J. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

K. Bring slab surfaces to correct level with straightedge and strikeoff. Use highway straightedge, bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations. See also "MONOLITHIC SLAB FINISHES" below.

L. Maintain reinforcing in proper position during concrete placement operations.

M. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.
   1. When air temperature has fallen to or is expected to fall below 40°F (4°C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50°F (10°C), and not more than 80°F (27°C) at point of placement.
   2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   3. Use only a non-corrosive, non-chloride accelerator. Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are NOT permitted.

N. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
   1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90°F (32°C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water.
   2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
   3. Fog spray forms, reinforcing steel and subgrade just before concrete is placed.
   4. Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

3.11 FINISH OF FORMED SURFACES

A. Rough Form Finish: For formed concrete surface not exposed-to- view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, damp-proofing, painting or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed. Follow all requirements in ACI 301, Chapter 10 for smooth form finish. Surface preparation for surfaces receiving waterproofing must be approved by the waterproofing manufacturer prior to construction.

3.12 MONOLITHIC SLAB FINISHES

A. Float Finish: After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Cut down high spots and

fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

B. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system, unless otherwise noted.
After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance. Grind smooth surface defects, which would telegraph through applied floor covering system.

C. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, and slab surfaces which are to be covered with membrane or elastic waterproofing, or sand-bed terrazzo, and as otherwise indicated, apply single trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming. Surface preparation for surfaces receiving waterproofing must be approved by the waterproofing manufacturer prior to construction.

D. Liquid Densifier: Apply a coat of the specified liquid densifier to all exposed interior concrete floors where indicated on the drawings. This surface must be continuously moist cured by a method satisfactory to the Commissioner. Apply and mechanically scrub compound into the floor in strict accordance with the manufacturer's printed instructions.

3.13 CONCRETE CURING AND PROTECTION

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
   1. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting; keep continuously moist for not less than 7 days.
   2. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.
   3. In order to avoid plastic or drying shrinkage cracks during warm, dry or windy weather, ACI 302 and ACI 308 shall be followed using wind breaks and sun shades when recommended. Evaporation retardant shall be as specified in Section 2.04.

B. Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as herein specified.
   1. Provide moisture curing by following methods.
      a. Keep concrete surface continuously wet by covering with water.
      b. Continuous water-fog spray.
      c. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.
   2. Provide moisture-cover curing as follows:
      a. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Provide curing and sealing compound to exposed interior slabs not receiving a liquid densifier application, and to all troweled slabs receiving mastic applied adhesives or "shake-on" hardeners. A clear curing and sealing compound shall be used on exterior slabs, sidewalks and curbs not receiving a penetrating sealer.
4. Use the specified strippable curing compound on surfaces to be covered with finish or coating material applied directly to concrete, such as liquid densifier/sealer, waterproofing, dampproofing, membrane roofing, flooring, painting, and other coatings and finish materials. Apply compound in accordance with manufacturer's direction.

C. Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
D. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of the specified curing compound or a continuous moist curing method approved by the Commissioner.
E. Sealer and Dustproofer: Apply a second coat of the specified curing and sealing compound to exposed interior slabs not subjected to vehicular traffic, noted on the drawings. These slabs must have received an initial coat of the curing and sealing compound.

3.14 SHORES AND SUPPORTS

A. Comply with ACI 347 for shoring and reshoring in multistory construction, and as herein specified.
B. Extend shoring from ground to roof for structures 4 stories or less, unless otherwise permitted.
C. Extend shoring generally at least 4 floors under floor or roof being placed for structures over 5 stories. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums to ensure proper distribution of loads throughout structure. Contractor shall provide the services of a registered Professional Engineer to design the shoring, and determine timing of removal.
D. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to safely support work without excessive stress or deflection.
E. Keep reshores in place a minimum of 15 days after placing upper tier, and longer if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

3.15 REMOVAL OF FORMS

A. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50°F (10°C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joints, slabs and other structural elements, may not be removed in less than 14 days and until concrete has attained design minimum compressive strength at 28-days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
C. Form facing material may be removed 4 days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.16 RE-USE OF FORMS

A. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.
B. When forms are intended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to the Commissioner.

3.17 MISCELLANEOUS CONCRETE ITEMS

A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in- place construction. Provide other miscellaneous concrete filling shown or required to complete work.
B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.
C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.
D. Grout base plates and foundations as indicated using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated. Where high fluidity and/or increased placing time is required using the specified high flow grout. This grout shall be used for all base plates larger than 10 square feet.
E. Steel Pan Stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screeds, tamp, and finish concrete surfaces as scheduled.
F. Reinforced Masonry: Provide concrete grout for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

3.18 CONCRETE SURFACE REPAIRS

Prior to all repairs, an as-built condition sketch and method of repair must be submitted to the Commissioner and engineer for review and approval.

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to the Commissioner.
Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with a bonding grout containing the specified bonding admixture. Place patching mortar after while bonding grout is still tacky.

B. For exposed-to-view surfaces, blends white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

C. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of the Commissioner. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discoloration's that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or pre-cast cement cone plugs secured in place with bonding agent.

D. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

E. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for tureens of slope, in addition to smoothness, using a template having required slope.

F. Repair finished unformed surfaces that contain defects, which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

G. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days, except at hydrostatic slabs.
Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. The specified underlayment compound or repair topping may be used when acceptable to The Commissioner.

H. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.

I. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cutout holes to sound concrete and clean of dust, dirt and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry-pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

J. Structural Repair: All structural repairs shall be made with prior approval of the Commissioner as to method and procedure, using the specified polymer repair mortar and/or specified epoxy adhesive. Where epoxy injection procedures must be used, an approved low viscosity epoxy made by the manufacturers previously specified shall be used. . In addition, all cracks shall be filled with the specified crack sealer or other method as approved by the Commissioner.

K. Underlayment Application: Leveling of floors for subsequent finishes may be achieved by use of specified underlayment material. Underlayment application shall achieve the tolerances specified in "MONOLITHIC SLAB FINISHES" above.

L. Specified Polymer Horizontal Repair Mortar: All exposed floors shall be leveled, where required, with the specified self-leveling repair topping.

M. Repair Methods not specified above may be used, subject to acceptance of The Commissioner.

3.19 WORK IN CONNECTION WITH OTHER TRADES AND CONTRACTS

A. Sleeves, pockets, openings, etc., shall be set in the concrete walls and arches as required for the mechanical trades as shown on approved shop drawings; these shall be encased or built into the concrete work and shall be properly placed and secured in position in the forms before concrete is placed.

B. Provide all chases, pipe slots, etc., required for the mechanical trades (see mechanical drawings), constructed as shown on the approved shop drawings.

C. Leave temporary access panels where required to install mechanical equipment as required by trade affected. Panels shall be formed with construction joints as specified. Details for such panels shall be submitted to the Commissioner for approval.

D. Coordinate all penetrations, cutting, and patching with waterproofing contractor.

3.20 CUTTING AND PATCHING

A. Contractor for concrete work shall be responsible for all cutting, removing and patching work where concrete surfaces are not installed within the limits shown on the drawings or specified herein. All such work shall meet with the approval of the Commissioner.

B. Where cutting and patching is required to accommodate the work of other subcontractors, such cutting shall be done at the expense of said subcontractors but shall be performed by the contractor for concrete work.

C. The location and extent of cutting in completed concrete work and the patching thereof shall meet with the approval of the Commissioner.

3.21 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. The City of New York will employ a testing laboratory to perform tests and to submit test reports.
B. Sampling and testing for quality control during placement of concrete may include the following, as directed by The Commissioner.
   1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
   2. Slump: ASTM C 143; one test at point of discharge for each truck; additional tests when concrete consistency seems to have changed.
   3. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each truck of air-entrained concrete.
   4. Concrete Temperature: Test hourly when air temperature is 40°F (4°C) and below, and when 80°F (27°C) and above; and each time a set of compression test specimens made.
   5. Compression Test Specimen: ASTM C 31; one set of 5 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
   6. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 25 cu. yds. plus additional sets for each 50 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimens tested at 7 days, three specimens tested at 28 days, and one specimens retained in reserve for later testing if required.
      a. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
      b. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
      c. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.
   7. Test results will be reported in writing to the Commissioner, Structural Engineer and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.
      a. Non-Compliance: All test reports indicating non-compliance shall be faxed immediately to all parties on the test report distribution list and the hard copies submitted on different colored paper.
      b. Nondestructive Testing: Windsor probes, sonoscope, or other non-destructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
   8. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Commissioner. Testing service may

conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

END OF SECTION

SECTION 03 41 13

PRECAST CONCRETE PLANK

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all precast concrete plank work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. For purposes of the Bid, allow for 5% of the gross pitched roof area originally containing skylights and ventilators and subsequently infilled for replacement of plank in kind.
2. Erect plank, install reinforcing in plane of floor, grout joints and spaces between adjoining planks and between planks and wall.
3. Furnish and install headers for cut plank, weld plates and field welding where indicated. All rectangular openings to be pre-cut.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification.

1.04 QUALITY ASSURANCE

A. Examine all other sections of Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section; and, coordinate work with that of all other trades affecting, or affected by work of this Section.

B. Cooperate with such trades to assure steady progress of all work under this Contract.

C. The work of this Section shall be performed by a Specialty Contractor.

D. REFERENCE STANDARDS

1. American Concrete Institute Standards - ACI 318 and ACI 711.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper

execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Provide complete and accurate shop and erection drawings indicating all conditions of construction, attachment devices, openings and the like.
B. Calculations for plank units proposed for use in project including those which are to be cut and those which are to support loads from adjacent plank. Calculations shall bear the seal of a Professional Engineer licensed in the State of New York.
C. Submit all materials proposed for use as bearing shims.
D. Show complete construction details, erection requirements and fastenings.
E. Certification of Specification Compliance.
F. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Store and erect all materials so as not to induce stresses in excess of the design allowable.
B. Exercise care in storage not to impart stains to underside of plank which may bleed through paint finish.

1.07 DESIGN AND FABRICATION

A. Plank shall be designed and reinforced for uniform live load as shown on loading schedule plus other superimposed loads as shown on the Drawings.
B. Planks shall be completely cured prior to delivery and shall be clean, smooth and straight with no projecting fins, broken edges, structural defects or warping. Violation of this clause shall be cause for rejection of units.

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
    1. Water based.
    2. Water-soluble.
    3. Can be cleaned up with water.
    4. Non-flammable.
    5. Biodegradable.
    6. Low or preferably no Volatile Organic Compound (VOC) content.
    7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
    8. Manufactured without compounds that contribute to smog in the lower atmosphere.
    9. Do not contain methylene-chloride.

10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. All roof deck and floors shall be of Metal-Edge Tongue & Groove Plank manufactured by MidCon Products, Inc., Hortonville, Wisconsin or an approved equal. The compressive strength of the concrete shall be 1500 psi when tested at 28 days. Edging shall be a tongue and groove section made of 22 ga., prefinished, cold-rolled, galvanized steel. Finish shall be smooth on both faces.

2.02 MATERIALS

A. Portland cement to comply with ASTM C 150-61, latest edition.
B. Lightweight, aggregate shall be clean and graded, free from excessive dust or other injurious matter.
C. Aerating compound shall be of a type which is not injurious to cement, aggregate or steel.
D. Water used in mixing shall be clean and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substances.
E. Fabric reinforcement shall be two layers of welded wire fabric in accordance with ASTM A 185-61T, latest edition.
F. Attachments for securing plank to structural members shall be 20 gauge zinc coated metal clips of suitable size and design.

2.03 Balance of materials required shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION

A. Planks shall be installed by skilled mechanics experienced in this type of work.
B. Installation shall be in accordance with the approved erection drawings and details based on the architectural and/or structural drawings.
C. The plank shall be handled and installed carefully.
D. Plank shall be clipped to supporting structural framing with clips wedged to flanges and fitted into the tongue and groove.

3.03 CUTTING AND PATCHING

A. Concrete plank shall be neatly cut to fit around all openings and projections through roof or floor providing such openings can be

accurately located prior to installation of concrete plank.

B. Cutting, where required, and located by approved shop drawings, shall be done with care to avoid damaging planks. Cuts shall be at a true angle to top of plank.

3.04 WASTE MANAGEMENT

A. Before concrete pours, designate locations or uses for excess concrete. Options include:
   1. Additional paving
   2. Post footing anchorage
   3. Swale, riprap reinforcing
   4. Flowable fill
   5. Footing bottom, retaining wall footing ballast
   6. Storm structure covers
   7. Underground utility pipe kickers
   8. Storm pipe flared end section
   9. Toe wash protection, and shoulder and toe outfall restraints for temporary erosion pipes

B. Before concrete pours, designate a location for cleaning out concrete trucks. Options include:
   1. Company-owned site for that purpose (meeting environmental standards)
   2. On-site area to be paved later in Project
   3. Collect reinforcing steel and place in designated area for recycling.

End of Section

SECTION 04 01 00

MASONRY RESTORATION AND CLEANING

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all masonry restoration and cleaning work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

NOTES:

Sections 04 05 03, 04 40 00 and 04 20 00 act as complementary to this Section and all requirements set forth therein apply to this work as if restated in full.

Refer to Schedule of Masonry Repairs and General Masonry Restoration Notes contained on the drawings for the description and quantities of the masonry repairs to be accomplished as a part of the basic work of the Contract

B. Masonry Cleaning using suitable methods as defined in the specifications. Cleaning shall be accomplished in such a manner so as to remove dirt and accretions and to present a uniform appearance similar to that demonstrated at the approved test panels. Cleaning process shall be determined by testing and mockups as follows:

1. Brick. Demonstrate specified method for cleaning brick on an area not less than 100 square feet.
2. Granite Trim. Provide one sill or one lintel.
3. Granite Plinth. Provide sample ten (10) square feet in area. Sample shall include area of cementitious exudation.
4. Stain/Graffiti Removal. Provide five (5) mockup installations at staining and/or graffiti conditions identified by the Commissioner following the completion of the general cleaning.

C. Cleaning materials shall be one of the following:

1. "Hydroclean Brick, Granite and Sandstone Cleaner", Hydrochemical Techniques, Hartford, CT.
2. "SureKlean Restoration Cleaner", ProSoCo, Kansas City, Kansas
3. "SureKlean Heavy Duty Restoration Cleaner", ProSoCo, Kansas City, Kansas
4. Deidrich Chemical Company "Restoration Cleaner"

D. Repoint all stone to stone joints within fields and trim as well as brick to stone joints at sills, lintels, beltcourses and decorative stone trim.

E. Prepare and repoint all joints (100 percent) of the brick masonry façade.

F. For purposes of the Bid, remove and replace 200 missing and damaged bricks; state unit price for adjustment.

G. Repointing work as required includes:
   1. cutting out defective and open joints,
   2. preparation, repointing and tooling to match existing walls with custom mortar mix as determined for each building element.
   3. Joints eroded to a depth greater than 1 inch shall be backpointed prior to cleaning.
   4. Prepare and backpoint all joints eroded more than 1-1/3 inch to a depth of 3/4 inch from joint face. NOTE - Defective joints include those where mortar is cracked, missing, unbonded, friable, or eroded more that 1/4 inch from the surface. Cut out mortar for the full exposed length or height of a masonry unit if any defect is found in the mortar joint adjoining said unit.
   5. Where specified and indicated, removal of existing masonry shall include - removal of existing masonry, flashing and deteriorated lintel assemblies and replacement with new flashing, stainless steel or HDG lintel assembly and restoration of masonry using reclaimed and/or new material in size, texture and joint pattern to match existing.

H. Remove existing corrugated metal cladding on all parapet walls and:
   1. Remove existing "hat channels" and flashings.
   2. Sound existing "cement parge coat" to insure tight bond with existing brick and for the purposes of the Bid, allow for 1500 square feet of removal and replacement of existing parge coat at the stated unit price.
   3. For purposes of the Bid, "Stabilize" 300 square feet of existing brick masonry after removal of cement parge coat by either removal and replacement, stitching or other means.
   4. Complete removal of cement parge coating at "towers" on all elevations; remove outer wythe of brick and rebuild with new or reclaimed brick.

I. Repair major structural cracks in exterior masonry by removing and rebuilding with either reclaimed and/or new material matching in color, texture, size and joint pattern.

J. Perform crack repair by epoxy injection at locations indicated and as specified herein.

K. Masonry window infill at south and west facades, above grade, to receive a finish stucco coating over the existing CMU as specified in Section 09 24 00.

L. Perform elevator bulkhead repairs/replacement including removal of existing masonry and provision of new brick at top 36". Provide new flashing, coping & roof membrane; coordinate with Sections 07 53 00 and 07 60 00. Coordinate with Section 05 50 00 for new HDG roof ladder.

M. Provide new cast stone chimney caps matching existing units being removed; provide flashing pan under bedding course and extend for

drips.

N. Clean and rustproof existing relieving angles and anchorage devices exposed in coordination with masonry repairs specified herein. Replace relieving angles and anchorage devices where shown on the drawings.

O. Provide access for City's inspection agency to field inspect existing conditions. During the progress of the work provide access for the City's inspection agency for review of the quantity and quality of work. Review and sign off on inspection agency's daily tally of quantity of work.

P. Remove obsolete fittings and attachments from exterior masonry work. Fill all resultant holes and other existing small holes.

Q. All existing window and door openings throughout the project shall have full surround caulking cut free and cleaned flush to present a suitable surface for new treatment. Wire brush clean, air blow and reseal as specified herein with material as specified in Section 07 90 00.

R. Remove existing "armatures" retaining the cast iron panels, restore masonry as required - NO METAL/IRON TO BE LEFT IN WALL. Coordinate work with Section 05 74 11. 1.

S. Remove and replace brick at existing courtyard wall elevations where cast iron treatments are removed and where masonry has be disturbed for structural reinforcing. For purposes of the Bid, allow for 15% of backup brick to be removed and replaced other than that area which may be open for inspection at the time of bidding.

T. Perform balance of exterior restoration work as may be required to insure integrity of the "skin" of the existing structure so as to preclude further water infiltration; Coordinate with Section 09 24 00 for parapet wall treatments.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above.

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.

B. The intent of this Section is to provide a complete restoration and renovation of the exterior masonry skin to extent shown; ornamental trim and the like to insure watertightness and structural stability.

C. **Masonry restoration specialist**: Work shall be performed by a firm having not less than five years successful experience in comparable masonry restoration project and employing personnel skilled in the processes and operations indicated and required. Each mechanic shall be required to be experienced in all of the restoration techniques and procedures included in his assigned work. Each mechanic performing specific activities will be required to separately demonstrate his capacity to complete that activity to the required standard by preparation of a mockup of that activity, see mockup and execution requirements.

D. Scaffold work required to accomplish restoration work will be the responsibility of this Specialty Contractor and will be adequately and safely maintained. All scaffolding, staging and appurtenances thereto shall comply, in total, to the requirements of Safety and Health Regulations for Construction, Chapter XVII of OSHA, Part 1926 and all related amendments and all other government agencies having jurisdiction. The most stringent requirements shall govern. Coordinate with Section 01 54 23.

E. Photo documentation - All areas in which any masonry rebuilding or replacement is to occur must be documented photographically in a manner approved by the Commissioner prior to the work. This documentation shall include professional quality 5 by 7 black and white and color prints of the work areas. All photographs must include tape for scale and be neatly labeled on the back to identify the area and building shown, the date of the photograph and the photographer. Work may not proceed in any given area until the Commissioner accepts the submitted photographs as meeting these requirements. Progress (50% complete) and completion photographs of each work area with identical views must be submitted to document the work.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Written description of means and methods to accomplish building out of spalled masonry and stone trim systems as per scope listing.

B. Further, submit written program including protection for continuing building operations and access by employees, deliveries and the general public, protection of surrounding materials, the building and site, prevention of water infiltration, building access, work hours and staffing. Describe in detail all materials, methods, and equipment to be used for each phase of

work. Obtain the Commissioner's and Architect's approval of the proposed work program.

C. Stripping and solvent cleaning material samples and test results.

D. Samples of each type of stones matching the existing. Furnish 2 finished samples each 12 inches by 12 inches by 1-1/2 inches deep showing the full range of color, size, irregularity and markings.

E. Samples of each type of lime, cement, aggregate, grout, adhesive, patching mortar, sealant and the like proposed for use. Furnish two 16 ounce samples of each material type. Sample of each type of anchor. Furnish two of each type.

F. Pointing mortar data and mix design including tests as specified in Section 04 05 03. Furnish laboratory testing performed by a laboratory acceptable to the Commissioner prior to the start of installation confirming mortar composition and compressive strength. Provide five additional laboratory tests during the work at intervals determined by the Commissioner. Mortar for tests shall be taken from mortar batches mixed for actual placement in the work in the presence of the Commissioner.

G. Shop drawings detailing size, shape, detail, type designation (coordinated with the types shown in tables in these specifications) and location of each dutchman, full stone or patch installed.

H. The Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

I. Certification of specification compliance.

J. Material Safety Data Sheet (MSDS) must be submitted for each product.

K. Field survey to determine final scope of repairs: After staging is in place for direct access to brick and stone at each elevation the City of New York's Testing Agency, with assistance from the Contractor shall review existing conditions of the brick façade and the stone on a stone by stone basis to verify, or adjust as required, the repairs shown on the drawings. See note on elevation drawings series S-300 concerning existing stone lintels. The Architect will provide a reproducible set of elevations to be used as a basis for documenting the survey. The survey notation must be the same as those used in the Contract drawings and the survey should reflect the intent of the repairs. The Contractor must receive written approval of the field survey prior to the commencement of work in any location. The approved field survey will serve as the scope of work for the project.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.

B. All materials for use in the work of this Section shall be stored under environmental conditions recommended by the manufacturer.

C. Protect materials during storage and construction. Keep containers tightly closed and away from open flames.

D. All cementitious materials and aggregates shall be stored in such

manner as to prevent deterioration or intrusion of foreign material.

E. Carefully pack and handle both new brick and brick to be reused to prevent chipping, cracking or breakage.

F. Carefully pack and handle replacement stone to prevent chipping, cracking or breakage. Stone damaged during handling or placement will not be accepted.

1.07 MOCKUPS

A. Prior to start of general masonry restoration, prepare the following Mockups on building surfaces where directed by Commissioner. Obtain Commissioner's and Architect's acceptance of visual qualities before proceeding with the work. Mockups will be used to measure standards of workmanship, finish, texture, color and qualifications of workman. Repeat mockup procedure as required until the Commissioner's and Architect's acceptance is obtained. Protect and mark acceptable Mockups, retain in undisturbed condition during construction to be used as a standard for judging completed work.

1. Repointing samples - 2 each for each type of stone encountered. In each material sample one shall demonstrate the method of removing existing mortar and the other for demonstrating the color of the mortar, tooling and finishing of the joint. Each sample shall be at least 10 lineal feet Each mechanic assigned to saw cutting joints must separately demonstrate his proficiency at this activity.

2. Dutchmen: 1 sample, "Da" type. Samples shall be completed in phases, the Architect must review and accept the first phase prior to the start of the second. The first phase shall include the preparation of the opening to receive the dutchmen, including any treatment to embedded metals and the installation of attachment pins in the dutchmen and receiving holes in the backup. Second phase shall include the placing of the dutchmen and the filling of joint to surrounding stone.

3. Crack repair by epoxy injection: 2 samples at locations chosen by the Commissioner.

1.08 REQUIREMENTS AND RESTRICTIONS

A. Protect persons, motor vehicles, all building surfaces (including but not limited to window glass and frames, grills, roof and flashing and doors) and related fixtures, all metals, fittings and mechanical and communications equipment, landscaping identified by the Commissioner during the preconstruction conference, surrounding buildings, all signage, flagpoles, lightpoles, lighting fixtures, canopies and related materials from damage. In the event of damage, make all repairs and replacements necessary to the approval of the Commissioner and at no additional cost to the City of New York.

B. The entire building will be fully operational during the course of the project; work near building entrances will only be permitted during restricted hours.

C. Protect all intake vent and grills from dust, water spray, fumes or chemicals.

D. Perform masonry repointing only when air temperatures are 45 degrees F and above and will remain 40 degrees F for not less than 7 days after completion of cleaning. Use epoxy, patching and grouting materials within the temperature limits established by the manufacturer for the use of these products. As required by manufacturers, protect materials from rain, temperature extremes and/or rapid drying by providing enclosures or coverings. Special cure procedures are required for patching material.

E. Prevent mortar, adhesives or grout from staining surrounding masonry and adjacent surfaces. Remove any spill immediately. Protect sills, ledges and other protection from mortar droppings by coating with sand. No spills shall be permitted to remain at the end of each work day. Perform no mortar work in wet weather or when rain is predicted within 2 days unless work is protected within waterproof enclosures. Cover mortar work at the end of each day and whenever work is not in progress if rain is predicted. Extend waterproof covers securely over work area.

E. All exterior repairs shall exactly match the color, texture, performance characteristics and character of surrounding existing work.

F. All surfaces to receive new jointing operations shall be dry and clean of all foreign matter.

G. Sealant applicator tool shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as detailed, specified or arise in the actual field conditions. No work shall be done if air temperature is below 40 degrees F.

H. Sealant Joint Design:
   1. Joints shall be a minimum of 1/4 inch deep by 1/4 inch wide.
   2. Joints in masonry or abutting dissimilar materials: Depth to be equal to width of joints in joints up to 1/2 inch wide; joints 1/2 to 1 inch wide, depth shall be 1/2 inch.

1.09 SEQUENCING/SCHEDULING

A. Perform masonry restoration work in the following sequence:
   1. Clean masonry.
   2. Repair, replace or patch damaged masonry.
   3. Rake out and repoint mortar joints. Perform sealant work.
   4. Conduct punch list on lift and perform required remedial operations, if any.

   Cure time for all mortar, adhesives, patching materials and caulks/sealants shall be a minimum of 7 days.

1.10 SPECIAL GUARANTEE/WARRANTY TERMS

A. Provide written warranty ensuring that all replacement masonry, patching materials and mortar that are determined to become cracked, spalled, hairlined, discolored or otherwise unacceptable within a period of 1 year from the date of completion will be replaced in a manner conforming with the requirements of this specification; further, guarantee/warranty shall be extended to all sealant/caulking operations performed as part of the

restoration operations.

B. Repair and replace work which becomes defective during the guarantee term, without cost to the City of New York.

1.11 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 MATERIALS - Materials, physical and chemical properties, and composition of masonry and mortar used in renovation work shall match that of original existing masonry and mortar to be repaired, unless samples and testing determine that existing mixtures and materials are faulty or non-performing.

2.02 REPOINTING AND PATCHING MATERIALS - Each class or mixture of mortar shall have a 28-day compressive strength matching the compressive strength of the original existing mortar in the structure as determined by ASTM C 109/C 109M for mortar. Test specimens of existing mortar shall be taken from a sound and intact representative portion of the structure, at locations indicated. Mortar may contain admixtures, such as pigments, to match the characteristics of the original mortar. Use of all admixtures shall be subject to approval.

Each class or mixture of mortar shall have a cement content matching the cement content of the original existing mortar in order to provide uniform strength, weathering characteristics, and appearance of repaired surfaces in relation to existing surfaces.

A. Portland Cement, Type I ASTM C 150, White Portland Cement. Ordinary gray cement may be used if it does not effect color matching or uniformity. Cement must comply with ASTM C 91, not more than 0.30% water soluble alkali.

B. Hydrated Type S Lime for Masonry Purposes, ASTM C 207; Air entrained lime may not be used.

C. Mortar Aggregate - Well graded sharp bagged mason's mortar sand, ASTM C 144, further modified by the requirement that the aggregate match to the sample of the original mortar aggregate as determined by the Contractors testing agency as approved by the City of New York.

D. Water shall be clean and free from deleterious materials. Only potable water may be used.

2.03 BRICK MASONRY

A. New brick shall match, as closely as possible, to the satisfaction of the Commissioner and Architect, the existing in color, texture and size for the intended usage and shall meet the requirements of ASTM C 216, Grade SW, FBS for exterior use.

2.04 STONE

A. Granite - as specified in Section 04 40 00.

2.05 SOLVENTS, COATINGS AND STRIPPERS - See Part 1 Above

2.06 ACCESSORIES, ADHESIVES, ANCHORS AND RELATED MATERIALS - Coordinate with Structural Drawing S-101; Most Restrictive Apply - Note Requirement for Visual Inspection of Existing Substrates.

A. Drilled-In anchor devices - "Pos-I-Tie" with "Tapcon" screws and loop ties as manufactured by National Wire.

B. Brick/Brick ties shall be similar and equal to Hilti "HIT" renovation ties modified to receive a stainless steel wire "wye" shaped brick tie.

C. Brick-backup masonry ties shall be similar and equal to Hilti "HIT-C20" renovation tie with stainless steel loop wire tie for brick anchorage.

D. Pin Anchors - ***Assume anchor length to be 10 to 12 inches.***

1. Type 304 stainless steel pins, 1/4 inch diameter, square cut ends.
2. Manufactured anchor devices shall be similar and equal to HILTI "HIT C20/5470001/12 inch" and shall be complete with anchor rod device and all required accessories.

E. Control Joints - Factory extruded solid section of rubber similar and equal to "RS Series - Rubber Control Joint" by Hohmann & Barnard, Inc. conforming to the following:

1. Extruded rubber material designed for masonry walls at control joints
2. Rubber material conforms to ASTM D-2000 2AA-805 with a durometer hardness of 80 (+ or - 5) when tested in conformance with ASTM D 2240

F. Bearing pads - 70 Durometer solid neoprene, bar form.

G. Filler system - "FF1" closed cell neoprene foam, Progress Unlimited.

H. Soft Joints and Expansion Joints - Factory extruded closed cell neoprene with adhesive surface similar and equal to Hohmann & Barnard "NS" or equal by Heckman or Williams.

I. Helical Masonry Ties for Stabilization of Existing Masonry Walls: Ties shall be fabricated from stainless steel, Type 304. Sizes,

type and length of ties shall be as recommended by the helical tie manufacturer for applications indicated. Provide DA508 Dur-O-Flex Friction Pinning Anchor by Dur-O-Wal/H&B or equal by Heckman or Hilti.

J. Brick Replacement Anchors: Anchors shall be fabricated from stainless steel, Type 304. Sizes, type and length of ties shall be as recommended by the anchor manufacturer for applications indicated. Provide DA5431 or DA 5213S by Dur-O-Wal/H&B or equal by HecKman or Hilti."

K. Dutchmen anchors - Threaded stainless steel rods, 1/4 inch diameter, length as indicated on drawings.

L. Anchor resin for dutchmen and full stone - An epoxy-resin grout shall be used to bond steel anchors to masonry, and shall be a 100 percent solids, moisture insensitive, low creep, structural adhesive. The epoxy shall conform to ASTM C881/C881M, Type IV; Grade and Class selected to conform to the manufacturer's recommendations for the application..

M. Stone anchors for dutchmen and full stone - Heckman 355: Spring Loaded Dowels stainless steel; stone/backup anchor Dur-O-Wal modified repair anchor #5905064 or equal by Heckman or H&B.

N. Stone to stone adhesive, for setting dutchmen - Sikadur 31 Hi-Mod Gel, Sika Corporation.

O. Crack injection resin - Sikadur 52 Injection Resin or Sikadur 35 Hi-Mod LV. Water based clay to be used to form surface dam during grouting procedure.

P. Stone anchors - Size, type and location in accordance with Building Stone Institute requirements, AISI Type 302/304 stainless steel.

Q. Spacers - Lead or plastic to maintain joint size.

R. Metal cramp treatment paint - Rust-Oleum "Rust Reformer" or equal.

S. Equipment used to drill holes in masonry, for patch anchors and other applications, shall be standard handheld masonry drills, commonly used for drilling small holes in concrete and masonry. The drill shall be a small, powered, handheld type, using rotary drilling mode only. Impact and rotary impact type drills will not be allowed.

2.07 FLASHINGS

A. Flashing material for use where same is fully supported by construction (non bridging material) shall be self adhering design, 40 mil thickness and shall be one of the following:

1. "Perm-A-Flash" by W. R. Grace;
2. "Bitu-Mem" by Nervastral, Inc.;
3. "Plastiwrap 40" by Progress Unlimited.
4. "Aqua/Flash 500" by Fiberweb Division of Clark/Hammerbeam Corp.
5. "MiraDRI TWF" by MiraDRI Moisture Protection Products.

B. Flashing material for use in general applications for through wall systems shall be either -

1. "Fiberweb 300" with companion tape.
2. "Rib-Bond" in either 10 ounce copper or 0.010 inch stainless steel at the option of the Contractor.

C. Through wall and pan flashings shall be 16 ounce Freedom Gray coated copper, formed to profiles as required by location, provided with expansion provisions and soldered.

2.08 MISCELLANEOUS ITEMS

A. Weeps - Preformed PVC tubing, rectangular design; cotton wicks or similar as necessary to match adjacent work or suitable for intended use.

B. Dampproofing materials shall be a asbestos free fibrated heavy body water base mastic similar to that furnished by Karnak.

C. Waterproofing treatment at exposed relieving angles and backup masonry - similar and equal to Tremco TP-60.

D. Structural supports - At option of Contractor, stainless steel Type 302/304 or ASTM A 36, hot dipped galvanized after fabrication.

2.09 GROUT

A. Cracks in brickwork shall be grouted with a fine mixture of 1 part lime (as specified herein) and 3 parts fine masons sand mixed to a pumpable consistency with an acrylic polymer modified liquid in a 1:1 ratio with water.

2.10 SEALANTS

A. Sealants shall be "Type IV" as specified in Section 07 90 00 including all primers, backers and other material requirements set forth therein.

2.11 CAST STONE

A. Unit assemblies shall be of profiles to match existing and/or as detailed; cast of 5,000 psi concrete and reinforced with galvanized mesh or rods.

B. Materials shall be steam or moist cured.

C. Surface finish - limestone.

D. Manufacturer - Metropolitan, Vernon or approved equal.

E. Anchor fastenings - stainless steel or other suitable non-corrosive base metal of sizes and types required to securely mount copings.

2.12 Balance of materials shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 REMOVAL OF PAINT AND GRAFFITI FROM FACADE AREAS

A. Initial "stripping" of existing masonry facade surfaces on all elevations shall be accomplished through a liberal application (s)

of a "gel" type heavy duty paint stripper as specified in Part 2 of this Section.

B. Surfaces shall be prepared by dry scraping all peeling and loose paint and fully saturated prior to application of solvent.

C. Allow agent to remain on surfaces for dwell time as determined by field testing and/or prescribed by the manufacturer for substrate and coating involved while observing action of agent and periodically reapplying and brush agitating surface.

D. Neutralize and wash all surfaces with a high pressure hosing, up to 600 psi, insure that all residue is removed.

E. Repeated applications of gel, subsequent scrubbings and flushings shall be done until all dirt and cleaning agents have been removed.

F. It shall be the responsibility of this Contractor, as per Part 2 of this Section, to determine what material shall be used so as not to damage either surfaces to be cleaned or surrounding areas and materials.

3.03 CLEANING OF FACADE AREAS

A. Cleaning of existing masonry facade surfaces on all elevations shall be accomplished through a liberal application (s) of a restoration type cleaner as specified in Part 2 of this Section.

B. Surfaces shall be fully saturated prior to application of cleaner.

C. Allow agent to remain on surfaces for dwell time as determined by field testing and/or prescribed by the manufacturer for substrate and coating involved while observing action of agent and periodically reapplying and brush agitating surface.

D. Wash all surfaces with a high pressure hosing, up to 600 psi, insure that all residue is removed.

E. It shall be the responsibility of this Contractor, as per Part 2 of this Section, to determine what material shall be used so as not to damage either surfaces to be cleaned or surrounding areas and materials.

3.04 POINTING - See Part 1 above

A. Prepare and point all facade areas from grade to top of building construction or as indicated.

B. Joint Preparation

C. Mortar preparation and mixing

1. Carefully measure and well mix together dry the lime, cement and sand. Add any pigments in measured quantities and well dispersed into the other materials. Mix mortar in small batches so that it will be used within one hour after preparation. Prehydrate pointing mortar as follows:

   a. thoroughly mix together all ingredients except water

   b. mix again adding only enough water to produce a damp unworkable mix which will retain its form when pressed in a ball.

   After 1-2 hours, add sufficient water to bring mortar to proper consistency, somewhat drier than conventional setting mortar.

D. Joint filling: Pack mortar in thin layers, not exceeding 1/2

inch. Compact and allow each layer to become thumbprint hard before installation of new lift. Mist surface between lifts. Tool filled joints to match the original joint profile to provide a slightly concave compacted joint by using a jointer of larger size than the joint. No mortar shall extend onto the face of the units.

E. Mist cure mortar for at least 24 hours after tooling. In windy or hot weather, review cure procedures with the Commissioner to ensure that mortar does not excessively fast.

F. Remove excess mortar from the surface before it sets using a bristle brush or by rubbing the surface with burlap or clean sand. Dried mortar may be removed with chemical mortar remover by written permission of the Commissioner.

G. Cut out and repoint any joints that develop hairline cracking, become unbonded, are friable after seven day cure period, or are otherwise defective in the opinion of the Commissioner at no cost to the City of New York.

3.05 STONE TRIM WORK

A. Existing stone joints throughout facades shall have all joints cut back to solid strata, minimum 1/2 inch and treated as specified in Paragraphs 1.02.A above and 3.04 above.

3.06 MECHANICAL REPAIRS

A. Provide patch anchors to ensure that the patch is tied to the existing masonry structure at a frequency of at least one patch anchor per 93 square mm square foot of patch plan surface area; specific locations for patch anchors shall be as indicated. Use small handheld, low-speed rotary masonry drills to produce holes in the existing masonry, within the limits for the patch anchor installation.

B. Drill holes into the existing substrate material of the masonry using rotary (non-hammer) drills. Holes shall have a diameter of 3 mm 1/8 inch larger than the anchor diameter. The holes shall be drilled to a depth of 100 mm 4 inches, except as otherwise indicated or directed. Drill holes shall not penetrate completely through the masonry, and shall provide at least 25 mm 1 inch of cover around the drill hole. Holes shall be cleaned by water blasting to remove drill dust and other debris and then blown dry with filtered, dry, compressed air. Drill holes shall be conditioned in accordance with the epoxy adhesive manufacturer's recommendations.

C. Clean anchors to remove all contaminants which may hinder epoxy bond.

D. Epoxy adhesive shall be pressure injected into the back of the drilled holes. The epoxy shall fill the holes without spilling excess epoxy when the anchors are inserted. Insert anchors immediately into the holes. The anchors shall be set back from the exterior face at least 25 mm (1 inch).

E. Install anchors without breaking or chipping the exposed masonry surface.

F. Remove excess epoxy and spills from the surface of the masonry.

The surface of the masonry shall be left in a clean and uncontaminated condition. Spills on adjacent surfaces shall also be removed and surfaces repaired as required.

3.07 SEALANT APPLICATION

A. Caulking of all joints of sash and other dissimilar surround joints on all faces from grade to top of existing parapet shall be totally cut out to and including all backing material and shall be recaulked and packed. No caulking or sealant work shall be performed until all necessary repairs have been made to existing sash or other materials. All masonry repair work shall have been completed prior to caulking operations.

B. Install backup material at proper depth in joint to provide sealant dimensions as specified above. Backup material shall be suitable size and shape so that when compressed 20 to 50% of it will fit in all joints as required.

C. Apply masking tape where required in continuous strips in alignment with joint edge. Remove tape immediately after joints have been sealed and tooled.

D. Prime surfaces where required with primer recommended by sealant manufacturer.

E. Apply, tool and finish sealant in accordance with manufacturer's recommendations.

F. Clean adjacent surfaces free of sealant or soiling resulting from this work as work progresses using solvent or cleaning agent recommended by sealant manufacturer. All finished work shall be left in neat, clean condition.

3.08 MASONRY REMOVAL AND REBUILDING

A. Carefully remove all areas scheduled for rebuilding or replacement using only hand tools. Cut out full units to permit replacement with full units. Remove loose debris and mortar from edges of removal area in preparation for rebuilding. Cracked areas are to be cut out one brick in each direction beyond the area of cracking.

Inspect any backup structure, such as lintels exposed during brick removal. Report any observed deterioration to the Commissioner. Mark, protect and store all reusable brick and all removed stone. Separately identify face and backup bricks for reinstallation in the same use.

B. Support and protect masonry to remain surrounding removal areas.

C. Install new brick and stone exactly replicating the bonding and coursing pattern of the original design and blending with the surrounding existing masonry. Match size and profile of existing joints.

D. Lay replacement units in full beds of mortar. Fill all bed, head and collar joints. Prewet bricks prior to laying to insure that the units are saturated, but without standing water on the surface.

E. Clean excess mortar from repaired areas using brushes or burlap. Commercial cleaning agents or muriatic acid may not be used.

F. Mortar proportions for rebuilding shall be as specified herein

above.

G. Brick that are loose and must be reset, that replace missing bricks, fill holes or that replace spalled or deteriorated bricks are to be fully bedded using the mortars in the proceeding paragraph.

3.09 REPLACING MASONRY UNITS

A. Provide temporary shoring or other supports as required to prevent displacement of existing masonry that is to remain. Perform the removal Work with such care as may be required to prevent failure of the masonry or damage to adjoining masonry that is to remain.

B. Remove the deteriorated and damaged masonry units to their full depth, including the surrounding joint mortar. Wet masonry to reduce dust. Install helical masonry ties at perimeter of replacement prior to removal as indicated in details on the Drawings. Wherever possible without damaging masonry, use a rotary power masonry saw for cutting Work. Leave square corners at adjoining masonry that is to remain. Clean joints and cavities by flushing with water or compressed air.

C. Dampen contact surfaces slightly before application of mortar, making sure there is no free water. Install matching masonry units with Type N mortar. Install units to match and align with existing masonry. Maintain bonding and coursing pattern of existing masonry. Use presoaked wood wedges where necessary to properly set the units and maintain uniform matching joints. Backpack and fill joints full of mortar. Finish joints to match existing adjoining joints as described in Section "Masonry Repointing". Fill open joints in backup. In solid masonry construction, ensure that entire collar joint is filled between the backup and the face masonry.

D. Replacement by Brick Stitching: Remove and replace existing brick to their full depth with new face brick, one brick each on both sides of crack in masonry. Also, remove and replace all existing pushed-out, missing, split or otherwise defective face bricks to match the adjoining existing good sound masonry. If the existing masonry work has a solid masonry common-bond pattern, existing sound header bricks shall remain. However, any cracked, defective or loose header brick shall be replaced. All new brick work shall be toothed into existing good work. At horizontal and diagonal cracks, the replacement of bricks shall be done in 4-foot lengths maximum. Existing mortar bed for replaced brick shall be thoroughly removed and the back parged with a coat of new mortar to fill the collar joint. Install brick replacement anchors every 16" each way and secure to backup masonry."

3.10 BUILDING OUT EXISTING MASONRY

A. Means and methods to be as outlined by submittal of Contractor as required in Part 1 of this Section but to be not less than the following.

B. Clean strata free from all loose and unsound material.

C. Apply bonding agent to all surfaces by brush or spray over entire surface to provide an apparent unbroken film of bonder. Material

shall be permitted to dry 1 hour prior to patching operation. Recoat if more than 24 hours elapse before application of mortar patch.

D. Trowel apply approved cement mortar mix to required thickness and cut joints to match existing. If mortar joint color is different from face brick, build up on separate integrally colored layers, otherwise, apply in single application. If depth of buildup is over 1 inch, secure to strata with suitable fasteners galvanized stucco type mesh suitable for intended use.

E. Provide moist curing blanket for a 7 day period.

3.11 GROUTING CRACKS

A. Mask and protect all masonry faces surrounding cracks to be grouted.

B. Provide water based clay surrounding injection ports in stonework to absorb excess grout and prevent staining.

C. Fully grout cracked stones allowing injection ports not more than 6 inches on center. Cover surface with water based clay to prevent staining stone surface. No excess grout may remain visible on the surface of cracks.

D. Hairline cracks in brick shall be grouted with material specified herein above by use of a caulking gun with material applied under even pressure to fill joint and then to be tooled or bagged to produce a matching texture.

3.12 CRACK REPAIR

A. Epoxy Repair

1. Mask and protect all masonry faces surrounding cracks to be grouted.
2. Provide water based clay surrounding injection ports and along the surface of the crack in stonework to absorb excess epoxy and prevent staining.
3. Fully grout cracked stones allowing injection ports not more than 6 inches on center, providing a minimum of two ports per crack.
4. Inject epoxy starting at the lower end of the crack until material appears at the next port.
5. Sequentially fill though all ports from bottom to top repeating this procedure until crack is completely filled.
6. No excess grout may remain visible on the surface of cracks after repair.

3.13 DUTCHMAN REPAIR - "Da" and FULL STONE REPLACEMENT

A. Remove whole or part stone as indicated for repairs to stones above relieving angles. Cut "Da" straight and true with top edge perpendicular to wall plane. Protect surrounding stone from damage during any phase of replacement operation, any damage to sounding stone must be corrected by replacing the entire damaged unit. Lower bed face of partial remaining stone at "Da" shall be dressed smooth to permit thin joint between existing stone and dutchmen. Maintain all joint sizes, new joint between "Da" dutchmen and partial remaining to shall not exceed 1/4 inch width.

B. Clean and waterproof, or replace relieving angle and all other exposed stone dowels and anchors. See drawings for locations where replacement relieving angle is required. Waterproof any backup masonry exposed during the work.

For waterproofing, remove all friable masonry, fill with mortar as required to provide solid substrate for waterproofing. Remove all rust scale by hand or power wire brushing as required. Apply 20 mil coating of waterproofing to exposed backup and angles to remain to provide a 20 mil coating. Prime and clean all metal surfaces prior to application. Provide continuous coating of all exposed surfaces. Allow waterproofing material to cure completely prior to proceeding with stone reinstallation.

C. Install expansion anchors in backup, two per 30 inch stone, three per 60 inch stone (or "Da"). Drill holes into surrounding stone to receive spring loaded anchors, two into stone above and one to either side. Align and drill holes in new stone to receive backup anchor and to place spring loaded anchor. Install epoxy to receive backup anchors, and complete installation within pot-life of epoxy material. Mortar butter top and sides of "Da" prior to installation. Provide shims as required to maintain joint size and prevent movement until mortar and epoxy are set. Rake and repoint perimeter joints after adhesives are full cured.

3.14 WASTE MANAGEMENT

A. Separate and recycle waste materials in accordance with the Waste Management Plan and to the maximum extent economically feasible.

B. Fold up metal banding; flatten and place in designated area for recycling.

C. Collect wood packing shims and pallets; place in designated area.

D. Place unused mixed mortar in designated locations where lower-strength mortar meets the requirements for bulk fill; for example, use as retaining wall footing ballast, cavity fill at grade, or underground utility pipe kickers.

E. Separate masonry waste and place in designated area for use as structural fill or in landscaping of the Project.

End of Section

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SECTION 04 05 03

MORTARS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. This specification covers mortars for use in the construction of all unit masonry as may be required for the project. In this specification, the term mortar shall be understood to mean mortar composed of portland cement, hydrated lime, sand and water.

At the option of the Contractor, patent mix may be substituted.

Mortar Designations and Locations

1. Face Brick Masonry Rebuilding - Type "N".
2. Interior general usage and Bearing wall construction, brick or block - Type "S"
3. Masonry patching - Type "N" with bonding additive at Contractor option.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 04 01 00 - Masonry Restoration and Cleaning
B. 04 20 00 - Unit Masonry

1.04 REFERENCE STANDARDS

A. ASTM Standards

1. C5, Quicklime for Structural Purposes
2. C91, Masonry Cement
3. C109/C109M, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
4. C110, Test Methods for Physical Testing of Quicklime, Hydrated Lime, and Limestone
5. C128, Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
6. C144, Aggregate for Masonry Mortar
7. C150, Portland Cement
8. C207, Hydrated Lime for Masonry Purposes
9. C270, Mortar for Unit Masonry
10. C387, Packaged, Dry, Combined Materials for Mortar and Concrete
11. C476, Grout for Reinforced Masonry
12. C595, Blended Hydraulic Cements
13. C780, Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
14. C952, Test Method for Bond Strength of Mortar to Masonry Units

15. C979, Specification for Pigments for Integrally Colored Concrete
16. C1072, Test Method for Measurement of Masonry Flexural Bond Strength
17. C1093, Practice for Accreditation of Testing Agencies for Masonry
18. C1142, Specification for Ready Mixed Mortar for Unit Masonry.
19. C1180 Terminology of Mortar and Grout for Unit Masonry
20. C1232 Terminology of Masonry
21. C1324 Test Method for Examination and Analysis of Hardened Masonry Mortar
22. C1329 Specification for Mortar Cement
23. C1357 Test Methods for Evaluating Masonry Bond Strength
24. C1384 Specification for Admixtures for Masonry Mortars
25. C1586 Guide for Quality Assurance of Mortars
26. E72 Test Methods of Conducting Strength Tests of Panels for Building Construction

B. Brick Institute of America
   1. M 1-72, Portland Cement-Lime Mortar for Brick Masonry.

C. Masonry Industry Council
   1. Hot and Cold Weather Masonry Construction Manual, January 1999

D. Mortar shall meet the requirements of the local governing codes unless directed to the contrary by the Commissioner.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Certification of Specification Compliance
B. Schedule of uses, by Mortar Type.
C. Reports of quality control testing.
D. Material Safety Data Sheet (MSDS) must be submitted for each

product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All manufactured materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer, use and/or other pertinent characteristics.

B. All packaged and loose materials shall be stored under proper environmental conditions to prevent contamination from excessive temperature changes, foreign materials and the like that may have an adverse effect on same.

1. All perishable materials shall be properly protected and stored in weathertight structures, with floor raised not less than 1 foot above adjoining grade OR, for short intervals, on raised platforms and covered with waterproof tarps.
2. Aggregates shall be stored in clean bins, scows or platforms having hard, clean surfaces.
3. Aggregates of different kinds and sizes shall be placed in different stockpiles.

C. Should segregation of aggregates occur they shall be remixed to conform to the grading requirements.

D. Frozen aggregates or aggregates containing frozen lumps shall be thawed before use.

E. Cement that has hardened or partially set shall be removed from the site and not used.

F. Washed aggregates and aggregates produced or manipulated by hydraulic methods shall be allowed to drain for at least 12 hours before use.

1.07 ENVIRONMENTAL CONTROLS

A. No air-entraining admixtures or cementitious materials containing air-entraining admixtures shall be used in the mortar. No antifreeze compounds or other substances shall be used in the mortar to lower the freezing point. Calcium chloride or admixtures containing same shall not be used in any mortar employed in the Work.

B. Heat mixing water when air temperature is below 40°F (4°C) and heat aggregates when air temperature is below 32°F (0°C) to assure mortar temperatures between 40°F (4°C) and 120°F (49°C) until used.

C. Produce subsequent mortar batches within +/-10°F (5°C) of first batch.

D. Do not heat water or sand above 120°F (49°C).

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.

5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. All mortar mixes shall comply with the requirements set forth in ASTM C 270, "Standard Specification for MORTAR FOR UNIT MASONRY" and shall consist of mixes for respective locations designated in Paragraph 1.02.A of this Section.

B. Mix mortar materials to produce mortar cubes having the following compressive strengths when tested in accordance with Property Specification Table 2 of reference standard C 270.
   1. Mortar Type N --- 750 psi (5.2 MPa) at 28 days.
   2. Mortar Type S - 1,800 psi (12.4 MPa) at 28 days.

C. Proportion specifications (by volume) for mortar materials.

Mortar	Type	Portland or Blended Cement	Masonry Cement			Hydrated Lime or Lime Putty	Aggregate Ratio Measure in Damp Loose Condition
			M	S	N		
Cement Lime	S	1				over 1/4 to 1/2	
	N	1				over 1/2 to 1-1/4	
Masonry Cement	S	½			1		Not less than 2-1/4 and not more than 3 times the sum of the separate volumes of the cementitious materials.
	S			1			
	N				1		

2.02 MIXING PROCEDURES

A. Measure materials by volume or equivalent weight; do not measure by shovel.

B. Mix ingredients in clean mechanical mixer for a minimum of 3 minutes, maximum 5, with the maximum amount of water to produce a workable consistency.

C. Mortars that have stiffened because of evaporation of water from the mortar shall be retempered by adding water as frequently as needed to restore the required consistency. Mortars shall be used

and placed in final position within 2-1/2 hours after initial mixing.

2.03 COLOR REQUIREMENTS - to match existing brick.

2.04 MORTAR ADDITIVE FOR USE WITH TYPE "N" ONLY

A. Acrylic polymer and modifier mixture similar and equal to "ACRYL 60" by Thoro, Division of BASF.

2.06 GROUT

A. Core Fill Grout shall be a dry, pre-blended mix containing Portland cement, pozzolans and dried aggregates formulated for superior flow to fill masonry voids while meeting ASTM C 476 requirements for reinforced masonry construction.

B. Self Consolidating Grout (SCG) shall be a dry, pre-blended grout specifically designed to be highly fluid without segregation of the constituents. Grout shall fill cores and bond beams completely, even around heavy steel reinforcement, without the need for mechanical consolidation and re-consolidation.

Part 3 - EXECUTION

3.01 GENERAL - Apply mortar in accordance with requirements stated in related sections as/Paragraph 1.03 herein.

3.02 CONSTRUCTION

A. Mix mortar using a mechanical mortar mixer to ensure homogeneity and workability. Hand mixing of the mortar is permitted only with written approval of the Commissioner who will outline hand-mixing procedures. Observe mixing times of 4 - 5 minutes, consistent from batch to batch.

B. Use clean, potable water, add the maximum amount consistent with optimum workability. Maintain a uniform water/cement ratio.

C. Rinse out mixer following each batch.

D. At the end of the day, thoroughly rinse the mixer to avoid contamination of future mortar batches.

E. Retemper mortar by adding additional mixing water only to replace water lost due to evaporation. Do not retemper colored mortars.

F. Discard mortar 2.5 hours after initial mixing.

G. Tool mortar joints when surface is thumbprint hard. Keep tooling time consistent. Do not strike joint too early or too late in order to maintain color consistency.

H. Cure mortar a minimum of 28 days.

I. For masonry core fill grout applications, comply with the requirements of ASTM C 476.

3.03 CLEANING

A. Cleaning Method:

1. Clean mortar only with potable water or dry brush.
2. Clean masonry with the least aggressive cleaning solution and tec hnique possible.

3. Comply with cleaning procedure and recommendations of the manufacturers of both the cleaning solution and the unit masonry.
4. Utilize the same cleaning procedure on the sample panel at selection and during construction.

3.04 WASTE MANAGEMENT

A. Separate and recycle waste materials in accordance with the Waste Management Plan and to the maximum extent economically feasible.

B. Place unused mixed mortar in designated locations where lower-strength mortar meets the requirements for bulk fill; for example, use as retaining wall footing ballast, cavity fill at grade, or underground utility pipe kickers.

C. Separate masonry waste and place in designated area for use as structural fill or in landscaping of the Project.

End of Section

SECTION 04 20 00

UNIT MASONRY

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all unit masonry work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

NOTES:

Sections 04 05 03 and 04 01 00 act as complementary to this Section and all requirements set forth therein apply to this work as if restated in full.

Attention is directed to reinforced masonry requirements shown on the drawings and specified herein; *COORDINATE VERTICAL REINFORCING WITH INSTALLATION OF REINFORCED BOND BEAMS AND SPECIFIED HORIZONTAL JOINT REINFORCEMENT*.

All reinforced masonry shall be subject to Special Inspection as per Chapter 17 of the governing code.

1. Provide new interior reinforced concrete masonry partitions at - pump room in cellar; new toilet 116; storage 115; restoration of office/entry, first floor; new women's locker room/toilet, 2nd floor; for creation of legal exits from stair to stair at 3rd floor.
2. Provide new concrete masonry window infill at Flushing Avenue basement as well as Little Nassau Street below mechanical louvers. Provide anchor systems at jambs to tie into horizontal reinforcing. Provide cementitious waterproof coating on interior along with "Rx" waterproofing strip around existing opening to provide a positive water seal.
3. Infill existing openings as required with new CMU in overall thickness to match existing; provide drilled in anchors to provide continuity of wall systems.
4. Provide concrete or common brick for "batt" work and fillers as required to complete the work.
5. Provide "bond beam" construction as detailed.
6. Mortar requirements for the work herein shall be as specified in Section 04 05 03 and shall match existing for all face brick masonry and natural for concrete masonry.
7. Provide all required scaffold, ties, reinforcing, and the like and perform cleaning operations as work progresses.
8. Provide all spandrel, through wall and protective flashings at base of walls, at floor levels, at all relieving angles,

hanging and fixed steel lintels, above windows and door heads, at parapets, etc. all as shown on the drawings and as required by proper industry practice to insure conformance to guaranty requirements herein contained. Flashings shall generally -

a. Extend past face of exterior wall when set and cut off flush with wall after approval by Commissioner and/or, based upon type used, terminate with a stainless (0.10 inch) or copper (10 ounce) drip edge.
b. Be bedded on masonry with bead of Type II sealant.
c. When in block walls, be carried through block and turned up 2 inches where concealed and turned back on itself 1/2 inch where exposed.
d. Be pocketed at all terminations, including window and door heads and sills, with an envelope fold to form end dams.

NOTE: Lap all flashing materials a minimum of 6 inches at joints and fully seal with "butter" coating of clear silicone.

9. Provide head joint weep holes spaced at 24 inches o.c. horizontally.
10. Install, as part of the work of this Section, the following items furnished under other sections of these specifications; this listing is deemed for information only and failure to list any such item required does not relieve this contractor from the responsibility for setting of same:
    a. Metal through wall flashings as described elsewhere herein and specified in Section 07 60 00.
    b. Loose lintels (under 100 pounds) as furnished and specified under Section 05 50 00.
    c. Anchor bolts for retention of roof and other blockings required to be built-into masonry work.
    d. Access doors furnished under Section 08 31 00.
11. Perform all cutting, drilling and patching of masonry required by other sections and finish patching after such work has been installed. Consult ALL TRADES in advance and make provisions for installation of their work to avoid unnecessary cutting and patching.
12. Protect finished work and work in progress with adequate measures.
13. Provide filler sections at tops of concrete masonry walls to solidly engage steel decking or concrete slabs at all locations where walls are carried to deck above. System shall be mineral wool fire rated insulation as specified in Section 07 84 00 and shall be accomplished as part of this section responsibility; further, provide retention angles, channels, and other shapes for all concrete masonry walls terminating at or abutting to structure as indicated and/or required to comply with conditions of construction. Coordinate with Sections 05 12 00, 05 50 00 and 07 81 00.

14. Coordinate placement of piping, tubing, conduits, thermostats, switches, outlets and devices all as required by mechanical and electrical work. Verify locations and mounting heights of devices with Commissioner.
15. Patch and repair masonry fireproofing where deteriorated, damaged during construction, and as required by alteration.
16. Infill all openings in existing interior plastered masonry walls at LOCATION with terra cotta (structural clay tile) units in single or double wythe thickness as necessary to develop overall matching wall thickness. NOTE OPTION TO STEEL STUDS, METAL LATH AND PLASTER IN LIEU OF MASONRY, COORDINATE WITH SECTION 09 24 00.
17. Patch, extend, close or otherwise perform alterations to existing masonry in connection with alterations and additions. Where brick masonry is involved, reuse salvaged brick to restore areas in pattern and jointing to match existing. NOTE: Dimensions of backup and/or overall wall thickness may vary with conditions of construction; verify with drawings and actual field conditions encountered.
18. Perform balance of masonry work necessary and required to complete the project work.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 01 54 23 - Scaffolding/Staging
B. 05 50 00/08 31 00 - Furnishing of access panels
C. 07 84 00 - Firestopping

1.04 QUALITY ASSURANCE

A. Masonry Contractor: Work must be performed by a firm having not less than 3 years successful experience in comparable masonry restoration projects and employing personnel skilled in the type of work indicated on projects of similar work. Documentation shall include:
   1. Location of work
   2. Commissioner's name and phone number
   3. description of work
   4. date completed
   5. name of project superintendent
B. The independent testing laboratory shall demonstrate to Commissioner's satisfaction that it has the experience and capability to satisfactorily conduct the testing indicated without delaying progress of Work.
C. The Field Inspector shall demonstrate to Commissioner's satisfaction that they have the experience and capability to satisfactorily conduct the inspecting indicated.
D. Materials used in connection with this work shall conform in all respects to that as required by the Applicable Building Code and requirements of Federal Specifications, ASTM Designations and Standards, with modifications as specified herein. Size backup units to bond with face units.
E. The work of this section shall further conform to the Codes, Rules

and Regulations of the City of New York as promulgated within the 2008 New York City Building Code with latest amendments.

F. Reference Standards for Reinforced Masonry:
   1. Building Code Requirements for Masonry Structures (TMS 402-08/ACI 530-08/ASCE 5-08);
   2. Specification for Masonry Structures (TMS 602-08/ACI 530.1-08/ASCE 6-08);
   3. Commentary on Building Code Requirements for Masonry Structures (TMS 402-08/ACI 530-08/ASCE 5-08);
   4. Commentary on Specification for Masonry Structures (TMS 602-08/ACI 530.1-08/ASCE 6-08).

   Systems are based upon a compressive strength (f'm) of 1,600 psi minimum. Coordinate with Article "Bond Beams and Reinforced/Grouted Masonry" included within this Section as it addresses: Methods for determination of compressive strengths;

G. Testing Laboratory and Field Inspector Services
   1. General
      a. The Contractor shall employ and pay both an acceptable independent Testing Laboratory and Field Inspector unless otherwise required.
      b. The Work and materials shall be inspected and evaluated for compliance with the Contract Documents.
      c. The Contractor will permit and facilitate access of the Testing Laboratory and Field Inspector to the construction site and the performance of all activities for quality assurance by both parties.
      d. Failure to detect any defective work or material does not in any way prevent later rejection when a defect is discovered and it does not obligate the Commissioner/Architect/Engineer for final acceptance.
   2. Duties and authorities of testing agency:
      a. Testing Laboratory/Field Inspector shall inspect, sample, and test the material and shall inspect the construction of masonry in accordance with the contract documents. When there is reason to believe that any material or work fails to fulfill the requirements of the contract documents, report such deficiency immediately to the Commissioner/Architect/Engineer and Contractor.
      b. Testing Laboratory/Field Inspector shall report all test and inspection results to the Commissioner/Architect/Engineer and Contractor immediately after they are performed. Include in reports a summary of conditions under which test specimens were stored prior to testing and state what portion of the construction is represented by each test.
      c. The Testing Laboratory/Field Inspector are neither authorized to revoke, alter, relax, enlarge, or release any requirement of the Contract Documents, nor authorized to approve or accept, reject or disapprove, any portion of the Work.

3. Responsibilities and duties of Contractor:
   a. The use of testing and inspecting services does not relieve the Contractor of the responsibility to furnish materials and construction in full compliance with the Contract Documents.
   b. Include in the submittals the results of all testing performed to qualify the materials and to establish mix designs.
   c. To facilitate testing and inspection, comply with the following:
      1) Furnish any necessary labor to assist the designated testing agency in obtaining and handling samples at the project or other sources of material.
      2) Advise the testing agency/inspector sufficiently in advance of operations to allow for completion of quality tests and for the assignment of personnel.
4. Preconstruction Testing
   a. Clay Unit Masonry Tests: For each different clay masonry unit indicated, units shall be tested per ASTM C 67 except five bricks shall be selected at random for each 100,000 units or fraction thereof installed.
   b. Concrete Masonry Unit Tests: For each different concrete masonry unit indicated, units shall be tested for strength, absorption, and moisture content per ASTM C 140.
   c. Mortar composition and properties shall be evaluated per ASTM C 780, if Proportion Specification is used.
5. Field Testing: The tests performed in Preconstruction Testing shall be performed during construction for each 5,000 sq. ft. of wall area or portion thereof.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will

be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Samples and certifications of specification compliance of all materials to be incorporated in this specified work.

B. Contractor shall coordinate with the exterior façade restoration and shall erect on the site, 3 sample panels 6 feet long by 4 feet high of each unit required. Full size units shall be used to show color range, bond, profile or joints and workmanship. If not approved remove panel and install new panel (or panels), repeating the process until panel is approved. After approval panels will be standard of minimum requirements for workmanship. Panels shall remain until removal is authorized by the Commissioner.
In addition to above sample panels, Contractor shall provide sample "mockup and/or mockups" of exposed face brick masonry prior to actual start of work for Commissioner's approval. Sample work shall be incorporated within the finished masonry. Sample work, if disapproved will be removed and replaced with satisfactory work until same is approved and accepted by the Commissioner. Said area shall be marked and shall serve as a sample to be followed for all exposed work constructed as part of the area involved.

C. Material Safety Data Sheet (MSDS) must be submitted for each product.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements of the City of New York.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer, color and/or other pertinent characteristics.

B. Store and handle materials so as to preclude damage of any nature.

C. Do not use materials in broken containers or in containers showing water marks or other evidence of damage. Remove such materials from the site immediately.

1.07 ENVIRONMENTAL CONDITIONS AND PROTECTION

A. Do not erect any masonry when temperature of surrounding air is below 40 F unless approved means are provided for maintaining the masonry at a temperature above this point during and for 72 hours subsequent to erecting of masonry. Do not use masonry materials which are likely to contain frost or are covered with ice or snow. Do not mix antifreeze ingredients with mortar. Take down any completed work found to be affected by frost or freezing and rebuild without change in contract price. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602

B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

C. Protect fresh and uncompleted masonry against the elements when not being worked on, by use of non-staining weatherproof covering properly held in place.

D. Rake back unfinished work where possible; tooth only where

absolutely necessary. Sweep previously laid work clean before resuming work.

E. Shore and brace walls as necessary for proper protection and execution of work in accordance with OSHA requirements setting forth "limited access zone" and "braced walls 8 feet and over in height" which required special attention.

F. Where a masonry bond between parts of adjoining work can not be made, provide a mechanical bond with anchors, dowels, and the like to insure proper and stable connections.

G. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

1.08 SCAFFOLDING - Coordinate with Section 01 54 23

A. Furnish, install and maintain safe and adequate scaffolding, centering and other equipment as long as necessary.

B. Lay up masonry exposed to view or the weather in the finished building from the side of wall and/or partition on which it is exposed.

C. Holes will not be permitted in any exposed masonry.

D. All scaffold systems shall be erected and maintained in accordance with the total requirements of Safety and Health Regulations for Construction, Chapter XVII of OSHA, Part 1926 and all related amendments and all other government agencies having jurisdiction. The most stringent requirements shall govern.

1.09 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.

8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL MASONRY UNIT REQUIREMENTS

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not uses units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.02 FACE BRICK MASONRY - Coordinate with Section 04 01 00

A. Brick shall match existing in color, texture and size to the satisfaction of the Commissioner and Architect; multiple submissions may be required to insure "match".

B. General: Provide shapes indicated and as follows:
   1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
   2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

C. Face Brick: Facing brick complying with ASTM C 216.
   1. Grade: SW.
   2. Type: FBS.
   3. Initial Rate of Absorption: Less than 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67.
   4. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."

2.03 COMMON BRICK - ASTM C 62, Grade SW, Standard Size.

2.04 CONCRETE BRICK - ASTM C 55, Type S-1.

2.05 CONCRETE MASONRY UNITS

A. General - All units shall conform to requirements of ASTM C 90, Type I - moisture controlled units. Grout units solid for locations indicated.

B. Aggregates - Medium/Normal, ASTM C 33

C. Density - Maximum - 125 pcf

D. Linear Shrinkage - Governed by Table 1, ASTM C 90 as tested in accordance with ASTM C 426.

E. Units shall be "fire rated" as required by drawing locations and/or schedules and shall be certified by the manufacturer as

complying with UL 618 for thickness and mix designs and in conformance . the following "equivalent thickness" criteria for specific aggregates.

Table 1—Fire Resistance Rating Period of Concrete Masonry Assemblies (ref. 1)

Aggregate type in the concrete masonry unit[2]	Minimum required equivalent thickness for fire resistance rating, in. (mm)[1]						
	4 hours	3 hours	2 hours	1.5 hours	1 hour	0.75 hours	0.5 hours
Calcareous or siliceous gravel	6.2 (157)	5.3 (135)	4.2 (107)	3.6 (91)	2.8 (71)	2.4 (61)	2.0 (51)
Limestone, cinders or slag	5.9 (150)	5.0 (127)	4.0 (102)	3.4 (86)	2.7 (69)	2.3 (58)	1.9 (48)
Expanded clay, shale or slate	5.1 (130)	4.4 (112)	3.6 (91)	3.3 (84)	2.6 (66)	2.2 (56)	1.8 (46)
Expanded slag or pumice	4.7 (119)	4.0 (102)	3.2 (81)	2.7 (69)	2.1 (53)	1.9 (48)	1.5 (38)

1. Fire resistance rating between the hourly fire resistance rating periods listed may be determined by linear interpolation based on the equivalent thickness value of the concrete masonry assembly.
2. Minimum required equivalent thickness corresponding to the hourly fire resistance rating for units made with a combination of aggregates shall be determined by linear interpolation based on the percent by volume of each aggregate used in the manufacture.

F. Face Unit Size (except brick) - 8 inches by 16 inches by bed depth required.

G. Finish and Appearance: Concrete block exposed in the finished building or receiving paint shall have uniformly fine texture free of warpage, chips, cracks, chipped edges, checks, pits, spalls or other defects that would impair the appearance of the exposed surfaces when viewed from a distance of not less than 20 feet (6.1 m) under diffused lighting.

Further, all concrete masonry units in areas to receive block filler and epoxy paint finish shall have a tight/fine surface texture free of defects that will impair the installation of smooth surface coatings free of voids as specified in Section 09 90 00.

H. Provide special shaped units as required to form bond beams, control joints, and the like all of same material as the balance of wall system.

2.05 ACCESSORIES

A. Wall reinforcement, Cavity Type - Truss Type with adjustable rectangular section; mill galvanized; #9 wire. Provide preformed corners. All face masonry veneer shall be reinforced with either 9 gauge or 3/16 inch diameter continuous stainless steel wire at each anchor point. Material similar and equal to "#185 Grip-Lok Truss" with interlocking plate for all masonry/masonry locations and "Byna-Tie" system each as manufactured by Hohmann & Barnard, Inc.; Heckman; Wire Bond or approved equal. Size material to fit conditions.

B. Regular wall reinforcement - Truss type, mill galvanized; #9 wire. Provide preformed corners. Size material to fit conditions. Material as furnished by H&B; National; Wire Bond or approved equal.

C. Control Joints - Factory extruded solid section of rubber similar and equal to "RS Series - Rubber Control Joint" by Hohmann & Barnard, Inc. conforming to the following:

1. Extruded rubber material designed for masonry walls at control joints
2. Rubber material conforms to ASTM D-2000 2AA-805 with a

durometer hardness of 80 (+ or - 5) when tested in conformance with ASTM D 2240

D. Soft Joints and Expansion Joints - Factory extruded closed cell neoprene with adhesive surface similar and equal to Hohmann & Barnard "NS" or equal by Heckman or Williams.
   1. Conforms to ASTM D 1056 Grade 2A1

E. Steel column and beam ties - "Grip-Stay" System by Hohmann & Barnard, Inc., galvanized. Material as furnished by Heckman or Dur-O-Wal shall be considered equals.

F. Deck Fillers - Coordinate with Part 1; see Section 07 84 00.

G. Retention systems
   1. Angles shall be a minimum 14 gauge by 6 inches by 6 inches by 6 inches spaced 24 o.c. and staggered on each side of wall to yield an effective 12 inch spacing.
   2. Pre-engineered assemblies shall be similar and equal to "PTA" Series Partition Top Anchors as manufactured by Hohmann & Barnard, Inc. in design series suitable for intended application. Material furnished by Heckman or Dur-O-Wal shall be considered equals.

2.07 ANCHORAGE DEVICES/BRICK TIES

A. Facing Masonry to backup masonry: 12 gauge hot dipped galvanized, ASTM A 153, Class B2, 1.5 oz./sf. similar and equal to Hohmann and Barnard, Inc. "200 SIS" anchorage devices with 3/16 inch Byna-Tie" type cavity design drip ties of matching material.

2.08 SOLVENT - ProSoCo, Inc. "Enviro Klean® EK Restoration Cleaner" or equal by Hydrozzo, Cresset or Speeco and conforming to the following:

A. FORM: Clear amber gel
B. SPECIFIC GRAVITY: 1.06
C. pH: 5.5 (concentrate)
D. WT./GAL.: 8.82 lbs.
E. FREEZE POINT: N/D
F. FLASH POINT: NA

2.09 THROUGH WALL AND SPANDREL FLASHINGS

A. Flashing material for use in general applications for through wall systems shall be either -
   1. Fiberweb "Copper Aquaflash" and composed of 50 mil thick copper sheet membrane flashing consisting of a 5 oz. solid sheet of copper which is laminated on one side with polyester film and bonded on the other with a highly adhesive bitumen with a release liner.
   2. Preformed or mechanically keyed flashings shall be fabricated from either 10 ounce copper or 0.010 inch stainless steel at the option of the Contractor. Products by Cheney, York or Keystone will be acceptable. Furnish prefabricated end dams/flashing corners as appropriate.
   3. "5 ounce Copper Fabric Flashing" as manufactured by York Manufacturing Company; Sandell; Advanced; or approved equal. If asphalt coated material is proposed, provide either polymer base material compatible with sealant specified in

Section 07 90 00 or sealant cap fabricated from either 12 ounce copper or stainless steel sheet.

B. Mastic/sealant: Manufacturer's standard silicone or butyl for specified flashing.

C. Drip Edge - prefabricated assembly by Hohmann and Barnard; Illinois Products Co. or approved equal in 26 gauge stainless steel or 12 ounce copper (tin coated as and if required by details).

D. End Dams: Provide prefabricated end dams fabricated from 26 gauge stainless steel with welded corners similar and equal to those provided by Hohmann and Barnard; IPCO or approved equal

2.10 CAVITY WALL DRAINAGE SYSTEMS

A. Drainage system shall be "Mortar Net" manufactured by Mortar Net USA, Ltd. or approved equal and shall conform to the following performance specifications.

1. Size: 1 inch thick by 10 inch height by 5 foot length
2. Material: Polyethylene or Nylon mesh in trapoezodial configuration designed to allow moisture to flow downward in the cavity or collar joint to masonry flashing and weeps and hence to the exterior. **DRAINAGE SYSTEM TO BE CONTINUOUS AT THE BASE OF THE WALL AND AT ALL INTERRUPTIONS OF CAVITY DRAINAGE PLANE.**

2.11 WEEPS

A. Weep units shall be a product known as "Cell-Vent" distributed by Dur-O-Wall; "QV - Quadro-Vent" by Hohmann and Barnard, Inc. "Mortar Maze" by Advanced Flashing Products, Inc. or equivalent product by Heckman or MRCA.

2.12 BOND BEAM AND REINFORCED AND GROUTED CONCRETE MASONRY SYSTEMS

A. Concrete block shall be as specified in Paragraph 2.05 above.

B. Grout Fill - Minimum 3,000 psi stone concrete conforming to design and material properties specified in Section 03 30 00 and as set forth below.

C. Core Fill Grout shall be a dry, pre-blended mix containing Portland cement, pozzolans and dried aggregates formulated for superior flow to fill masonry voids while meeting ASTM C 476 requirements for reinforced masonry construction.

D. Self Consolidating Grout (SCG) shall be a dry, pre-blended grout specifically designed to be highly fluid without segregation of the constituents. Grout shall fill cores and bond beams completely, even around heavy steel reinforcement, without the need for mechanical consolidation and re-consolidation.

E. Grouted masonry shall have a compressive strength f'm of 1,800 psi unless otherwise shown on the drawings. Strength shall be as measured by prism tests or other suitable method as outlined in Article 1.6 of reference standard.

F. Mortar for reinforced masonry shall conform to ASTM C 270 Type S and shall be of strength required for specified masonry strength (f'm) but not less than 1800 psi.

G. Reinforcing bars shall conform to ASTM A 615 Grade 60 deformed bars. Lap all continuous bars 48 diameters.

2.13 Balance of materials shall be as specified elsewhere in this section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 GENERAL MASONRY REQUIREMENTS

A. Grout solid all hollow metal, miscellaneous iron items and other built-in systems that occur in masonry construction. Provide temporary blocking as required to secure grout.

B. Set all loose steel lintels, miscellaneous items of metal construction, bearing plates, flashing, louvers, windows, access doors and other items as furnished under other sections of these specifications and required to be built into masonry work.

C. Dry-pack under all new bearing steel.

D. Construct "soft joint" where concrete masonry walls abutt structure; face brick abuts supporting steel and like conditions in accordance with B.I.A. requirements governing such work.

E. All masonry shall be laid with a vertical tolerance of 1/8 inch in 8 feet.

F. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:

1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for

warpage of units.

3.03 METAL ACCESSORIES FOR MASONRY WORK

A. Joint Reinforcement:

1. Install continuous joint reinforcement in alternate bed courses of block backup for cavity walls and in every third joint of interior walls and partitions.
2. Material shall be in width suiting masonry wall thickness, 2 inches less than block width. Lap splices. Use preformed corners and tees.
3. Install in first 3 block-to-block joints over and under openings in walls and extend at least 20 inches beyond each side of opening.

B. At all columns and beams apply tie systems specified in Part 2 at 16 inch spacing; penetrations through sheathing and/or insulation shall be sealed with Type II sealant.

C. Provide vertical and horizontal bar reinforcement as shown in bond beams and wall areas.

3.04 BRICK MASONRY - Coordinate with Section 04 01 00

A. Prior to starting the face masonry, build sample panels in accordance with Paragraph 1.05 herein. Do not start face masonry until such panels have been approved by the Commissioner.

B. Lay face brick bond(s) to match existing. **INSURE THAT MASONRY UNITS ARE "MIXED" FOR COLOR PATTERN TO APPROXIMATE, TO THE BEST POSSIBLE MATCH, APPROVED SAMPLE PANELS.**

C. Wet all brick thoroughly with water just prior to laying, except that brick having an initial absorption of less than 20 grams per minute per 30 square inches of bed surface, as measured in accordance with ASTM C 67, need not be wetted down.

D. Face masonry shall be installed with full head and bed joints.

E. Except for cleaning down, completely finish work as it is carried up. Lay up plumb, square, level and true to the required lines, grades and dimensions, in bond and properly anchored. In cavity walls, slope the top of the bed joints toward the center of the outer wythe to minimize mortar being squeezed into the cavity when units are shoved into line. Mortar protruding into the cavity shall be removed immediately. Point face joints as the work progresses.

F. At cavity walls, keep the space between wythes clear of all mortar drippings. Place the Mortar Net in the collar joint or cavity resting on the flashing at the base of the wall. Position with the zig-zag side up.

G. Face joints of face masonry shall be concave tooled back from the general plane of the face of unit. Tool and/or cut vertical joints ahead of horizontal joints. Tool joints when mortar is still plastic but somewhat hard to impress under firm thumb pressure. Slightly compress face of raked joints so that mortar surface is smooth. Clean all mortar from brick surface in open portion of tooled joints.

H. At control joints in face unit walls form a joint a maximum of 1/2 inch width (+0/-1/8 inch) by means of prefabricated elements

specified in Part 2 of this Section. Joints shall be oversealed as specified in Section 07 90 00 using Type II.

I. Provide inserts for weep holes and build into vertical joints of exterior wythe at the bottom of all exterior wall cavities and at all horizontal spandrel flashing where it closes off wall cavities. Weep holes shall be at every third vertical joint. Weep holes must be kept clean during construction.

J. Provide smooth beds of mortar for support of flashings. Place flashings as specified and seal or lock form all joints.

3.05 CONCRETE MASONRY

A. Lay in running bond, unless otherwise indicated on drawings, with cells in vertical position. In exposed surfaces, alternate vertical joints shall be in vertical alignment and centered on adjoining blocks. Block with concealed surfaces both sides shall have adjoining vertical joints staggered not less than 3 inches. All block shall be laid with full mortared face and cross shells, vertical and horizontal.

B. The thickness of vertical face joints shall be approximately the same thickness as the adjoining bed joints, but in no case greater. Cut CMU in circular masonry saw. No unit less than 1/2 size shall be used in wall construction with jointing visible in the finished work. Relocation of masonry openings necessitated by this requirement shall have the prior approval of the Commissioner.

C. Lay base with one course of units to define the spaces and locations of openings and to serve as a guide for the installation of concealed work. Start coursing, laid in mortar, bearing on concrete slabs and terminate with a full bed of mortar against framing above.

D. All concrete block partitions shall extend to the underside of the structure above unless otherwise shown. Leave space to permit installation of firestopping mortar as specified under Section 07 84 00 and caulking as applicable. All work related to these operations shall be performed by this Specialty Contractor. Provide partition anchor systems as specified in Part 1 herein.

E. Except for cleaning down, completely finish work as it is carried up. Lay up plumb, square, level and true to the required lines, grades and dimensions, in bond and properly anchored. Plaster the upper edges of shells and webs of the blocks heavily with mortar before placing the next upper block thereon.

F. Joints of CMU shall be compressed with trowel and cut flush. When the mortar has taken a slight set, joints exposed in the finished work shall be tooled to produce a concave joint.

G. Reinforce all block walls and partitions as specified elsewhere in this section.

3.06 REINFORCED AND GROUTED CONCRETE MASONRY

A. Reinforced and grouted masonry construction shall conform to the requirements of "Building Code Requirements for Masonry Structures (TMS 402-08/ACI 530-08/ASCE 5-08)".

B. Grouted masonry shall have a compressive strength f'm of 1,800 psi

unless otherwise shown on the drawings. Strength shall be as measured by prism tests or other suitable method as outlined in Article 1.6 of reference standard.

C. Lap all continuous reinforcing bars 48 diameters.

D. Units shall be laid in running bond.

E. Grout shall be puddled in place with a 1 inch by 2 inch wood stick. All cores shall be 100% solid grouted.

3.07 JOINTS

A. Provide prefabricated control joints in masonry where indicated on the Drawings and/or where specified. In addition, provide control joints wherever masonry abuts structure.

B. Form control joints in concrete masonry using one of the following methods:

1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.

2. Install preformed control-joint gaskets designed to fit standard sash block.

3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.

C. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 07 90 00 - JOINT SEALANTS but not less than 3/8 inch.

1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.08 BUILT-IN WORK

A. Coordinate to the fullest extent with the work of other trades in order that connecting and adjoining work may be properly installed.

B. Set and build in inserts, anchors, ties, bolts, blocking, plugs, and like items in contact with, supported on, or enclosed by masonry and which are furnished under other trades and contracts for setting in masonry.

C. Grout all spaces between all built-in items and masonry surrounding these items solidly with mortar.

3.09 CUTTING, PATCHING, HIDDEN PIPE, TUBING AND CONDUIT

A. Perform all cutting and patching of new work.

B. Refer to drawings and specifications for Plumbing, Heating and Electrical Work affecting the work of this section.

C. Note that all exposed interior masonry surfaces including those to receive paint or similar finish must present an attractive, even, regular appearance, unbroken except for normal jointing.

D. Cut holes for outlets, switches and receptacles neatly and, where conduits or pipe are run in partitions, cut away webs without interrupting the face of units or pattern of wall joints. Remove

excess mortar.

3.10 PROTECTION

A. Protect existing construction, adjacent work and finished work from damage. Provide drop cloths or other suitable protective coverings in all areas of the work.

B. Damage caused by the handling, storing, mixing or application of materials or the failure to provide adequate protection shall be repaired or replaced at no additional cost to the City of New York.

3.11 CLEANING AND POINTING

A. During the progress of the work, keep the exposed surfaces of masonry clean at all times and protected against damage. Upon completion of masonry and adjoining work likely to damage the masonry, and when directed by the Commissioner, clean the exposed surfaces thoroughly, using bristle brushes and clean fresh water. Wire brushes shall not be used. All cleaning operations shall proceed from top downward.

B. As cleaning progresses, examine all face joints in exposed masonry to locate cracks, holes or other defects, and point up all such defects and fill with mortar.

C. Where necessary in the opinion of the Commissioner, cut out defective joints and masonry units and replace with new materials, exercising extreme care to match original work.

3.12 ACCEPTANCE AND PATCHING

A. On completion of work, all equipment and rubbish resulting from the work of this section shall be removed from the premises.

B. Leave work clean, whole, and sound ready for additional finish or sealing as specified and/or as shown on the drawings.

3.13 FIELD QUALITY CONTROL

A. After installation of flashings and completion of masonry assemblies, inspect work.

1. Verify flashings have been properly installed at all required locations to prevent water penetration.
2. Verify weep holes have been provided to ensure proper drainage to exterior.

B. Water test flashings at minimum of 3 locations per elevation unless directed to contrary by the Commissioner to verify flashing has been properly installed and moisture drains through weep holes.

3.14 WASTE MANAGEMENT

A. Separate and recycle waste materials in accordance with the Waste Management Plan and to the maximum extent economically feasible.

B. Fold up metal banding; flatten and place in designated area for recycling.

C. Collect wood packing shims and pallets; place in designated area.

D. Place unused mixed mortar in designated locations where lower-strength mortar meets the requirements for bulk fill; for example,

use as retaining wall footing ballast, cavity fill at grade, or underground utility pipe kickers.

E. Separate masonry waste and place in designated area for use as structural fill or in landscaping of the Project.

End of Section

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SECTION 04 40 00

STONE WORK

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all stone work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

NOTE: Sections 04 05 03, 04 20 00 and 04 01 00 act as complementary to this Section and all requirements set forth therein apply to this work as if restated in full.

1. Granite sill repair in place, for purposes of the Bid allow for 20% of the windows.
2. Granite lintel repair/replacement:
   a. Prepare brick above to facilitate removal of steel and granite by "Stitch Tie" application to form an arch to allow for removal of brick to access deteriorated steel.
   b. Remove brick, granite lintel and caps to expose rusted steel and cut off rusted steel to the greatest extent possible; apply "rust bond" to balance of steel and the cut ends.
   c. Provide new granite lintel to match existing stone in type and finish.
   d. Restore granite caps and brick and proceed with stucco facing.
3. Chimneys: remove & restore limestone caps. Remove limestone caps on chimneys, (2) locations. Install new stainless steel flashings and limestone caps, (2) locations.
4. Clean down all finished work.
5. Protect all work in progress.
6. Provide flashing systems in connection with work of this Section; coordinate with Section 04 20 00 for material requirements and labor restrictions governing same for particular locations.
7. Furnish all items necessary for attachment of stones and/or support of same to other trades for embedment in to structure. Ultimate coordination responsibility for the location of these items is that of this Contractor.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above.

1.04 QUALITY ASSURANCE

A. The work of Section shall be performed by a "Specialty Contractors" who has a minimum of three years experience in the field.

B. Installer Qualifications: An experienced installer who has completed dimension stone cladding systems similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
   1. Installer's responsibilities include engineering, fabricating, and installing dimension stone cladding system.
   2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified structural engineer.

C. Structural Engineer Qualifications: A structural 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 dimension stone cladding systems that are similar to those indicated for this Project in material, design, and extent.

D. All stone shall be obtained from quarries having adequate capacity and facilities to meet the technical specification requirements as well as time constraints as set forth in the "Conditions" and in accordance with scheduling requirements of this project.
   1. Cutting and finishing shall be done by a fabricator equipped to process the material promptly as above and in strict accordance with specifications.

E. The definition of trade terms used in these specifications shall be those published by the National Building Granite Quarries Association, Inc..

F. Any piece of stone showing flaws or imperfections upon receipt at either the storage yard or building site shall be referred to the Commissioner and Architect for decision as to rejection, redressing or other action.

G. C1721 - Standard Guide for Petrographic Examination of Dimension Stone.

H. Definitions contained in ASTM C 119 apply to this Section.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Samples
   1. Three (3) each, 24 inches square by 7/8 inch thick, and finish required, one to be returned to the fabricator to serve as standard, one to remain on job for reference, one in office.
   2. Linear and piece samples of gaskets, anchorage devices, buttons, pads and the like to be used in the work.

B. Shop drawings showing all bedding, bonding, jointing, anchorage locations and details, dimensions and setting number of each stone and the like required to permit accurate and complete fabrication, erection and coordination between all parties.

C. Shop and fabrication drawings for special construction.

D. Evidence of quarry ability to perform adequately and within time period as per Paragraph 1.04.B above.

E. Evidence of fabricators capabilities to process and finish material as per Paragraph 1.04.B.1 above.

F. Certification of Specification Compliance.

G. Material Safety Data Sheet (MSDS) must be submitted for each product.

H. Material Test Reports: From a qualified independent testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
   1. Stone Test Reports: For each stone variety proposed for use on Project, provide test data indicating compliance with required physical properties including those specified by reference to ASTM standards. Include test data for flexural strength based on testing according to ASTM C 880, performed on specimens representative of minimum thickness and finish of installed stone, in both wet and dry conditions. Base reports on testing done within previous five years.
   2. Anchorage Test Reports: For each variety, finish and anchor type, based on testing according to ASTM C 1354, performed on specimens representative of minimum thickness and finish of installed stone.
   3. For metal components, indicate chemical and physical properties of metal.

1.06 PERFORMANCE REQUIREMENTS

A. General: Design stone anchors and anchoring systems according to ASTM C 1242.

B. Design stone anchors to withstand loads indicated without exceeding allowable working stresses established by the following: 1) For Structural Steel: AISC S335, "Specification for Structural Steel Buildings Allowable Stress Design and Plastic Design with Commentary." And 2) For Post-Installed Fasteners in Masonry: One-sixth of tested capacity when installed in masonry units indicated.

C. Control of Corrosion and Staining: Prevent galvanic and other

forms of corrosion as well as staining by isolating metals and other materials from direct contact with incompatible materials. Use materials that do not stain exposed surfaces of stone and joint materials.

1.07 PRODUCT DELIVERY, STORAGE, HANDLING AND ENVIRONMENTAL CONTROLS

A. Packing and Loading

1. Finished stone shall be carefully packed and loaded for shipment using all reasonable and customary precautions against damage in transit.
2. No material which may cause staining or discoloration shall be used for blocking or packing.

B. Site Storage

1. Upon receipt at the building site or storage yard, stone shall be stacked on timber or platforms at least 4 inches above the ground, and extreme care shall be taken to prevent staining during storage.
2. If storage is to be for a prolonged period, polyethylene or other suitable plastic film shall be placed between any wood and finished surfaces, and shall be used also as an overall protective covering.
3. Lifting and erection holes shall be plugged during freezing weather to prevent the accumulation of water.
4. Salt shall not be used for melting of ice formed in lifting and erection holes or on pieces, or for any purpose involving its contact with the stone.

C. Protection of Finished Work

1. All work in progress shall be protected at all times during construction by this Contractor by use of a suitable strong, impervious film or fabric securely held in place.
2. After the work is installed, it shall be the responsibility of the Contractor to see that it is properly and adequately protected from damage.
3. Boxing or other suitable protection shall be provided wherever required, but no lumber which may stain or deface the stones shall be used.
4. All fasteners for use in protective devices shall be noncorrosive.

1.08 PROJECT CONDITIONS

A. Cold-Weather Construction: Do not use frozen materials or materials mixed or coated with ice or frost. Remove and replace dimension stone cladding damaged by frost or freezing conditions. When ambient temperature is within limits indicated, use the following procedures:

1. At 40 deg F and below, produce mortar temperatures between 40 and 120 deg F by heating mixing water and, at temperatures of 32 deg F and below, sand. In heating mortar materials, maintain mixing temperatures within 10 deg F do not heat water to above 160 deg F. Maintain temperature of mortar on boards above freezing. Do not apply mortar to stone units or substrates below 32 deg F.
2. At 25 to 20 deg F heat both sides of walls under

construction. Use windbreaks or enclosures when wind velocity exceeds 15 mph.

3. At 20 deg F and below, provide enclosure and auxiliary heat to maintain air temperature above 32 deg F within enclosure. Heat stone so it is above 40 deg F at time of installation.

B. Cold-Weather Protection: When mean daily temperature is within limits indicated, provide the following protection:

1. 40 to 25 Deg F : Cover dimension stone cladding with a weather-resistant membrane for 48 hours after construction.
2. 25 to 20 Deg F: Cover dimension stone cladding with insulating blankets or provide enclosure and heat to maintain air temperature above 32 deg F within enclosure for 48 hours after construction. Use windbreaks or enclosures when wind velocity exceeds 15 mph.
3. 20 Deg F and below: Provide enclosure and heat to maintain air temperature above 32 deg F within enclosure for 48 hours after construction.

Part 2 - PRODUCTS

2.01 GRANITE MATERIALS

A. All granite shall be of standard grade, free of cracks, seams or starts which may impair its structural integrity or function. Inherent variations characteristic of the quarry from which it is obtained will be acceptable.

B. Material shall match existing stone in color, texture and finish to the satisfaction of the Commissioner.

2.02 LIMESTONE MATERIALS

A. All limestone shall be Indiana Oolithic Limestone conforming to the minimum performance values of -

1. Ultimate Compressive Strength (ASTM C 170) - 4,000 psi
2. Modulus of Rupture (ASTM C 99)---------- 700 psi
3. Absorption (ASTM C 97) ---------- 7.5 %

B. Material shall be graded Standard as classified by the ILI.

C. Limestone color shall be Gray .

D. Limestone finish shall be smooth.

2.03 MORTAR SETTING MATERIALS - See Section 04 01 00

2.04 ANCHORS, CRAMPS AND DOWELS

A. All anchors, cramps, dowels and other anchoring devices shall be fabricated from stainless steel, ASTM A 666, Type 316, temper as required to support loads imposed without exceeding allowable design stresses. Fasteners for Stainless-Steel Anchors: Annealed stainless-steel bolts, nuts, and washers; ASTM F 593 for bolts and ASTM F 594 for nuts, Alloy Group 2.

B. Cast-in-Place and Postinstalled Fasteners for Concrete and Masonry: Type indicated below, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed, for masonry, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

C. Postinstalled Fasteners for Concrete and Masonry: Chemical anchors

made from stainless-steel components complying with ASTM F 593 and ASTM F 594, Alloy Group or 2 for bolts and nuts; ASTM A 666 or ASTM A 276, Type 316, for anchors.

2.05 MISCELLANEOUS

A. Flashing material shall be as specified in Section 04 20 00.

B. Dampproofing materials shall be a asbestos free fibrated heavy body water base mastic similar to that furnished by Karnak; Meadows; or Sonneborn.

C. Structural supports - ASTM A 36, hot dipped galvanized after fabrication.

D. Cleaner - commercial, neutral liquid type for stone as recommended by stone fabricator; Ph factor between 7 and 10; free from crystallizing salts or water soluble alkaline salts; material to be biodegradable and phosphate free.

2.06 ADHESIVES - epoxy resin, clear, similar and equal to "Colma-Dur Gel" as manufactured by Sika Chemical Company and deemed suitable for intended application.

2.07 Balance of materials shall be as specified elsewhere in this section or as may be suitable for intended use.

2.08 FABRICATION - GRANITE

A. Dimensions

1. Maximum variation in the dimensions of any piece shall be 1/4 of the specified bed and joint width.

2.09 FABRICATION - LIMESTONE

A. Dimensions

1. Length and height: +/- 1/16 inch.
2. Deviation from Flat Surface, Exposed Face.
   a. Smooth Machine: +/- 1/16 inch
3. Critical Depth
   a. Smooth Machine: +/- 1/16 inch
4. Noncritical Depth: +/- 1/2 inch
5. Deviation from square: +/- 1/16 inch

2.10 FABRICATION REQUIREMENTS - GENERAL

A. Beds and joints shall be at right angles to the face, and joints shall have a uniform thickness of 1/4 inch unless otherwise shown or noted on drawings.

B. Backs of all pieces shall be sawn to approximately true planes. Maximum variation in thickness from that specified shall not exceed 1/4 inch. Sawn backs shall be cleaned of all rust stains and iron particles.

C. Reglets for flashing, etc., shall be cut in the stone where so indicated on the drawings.

D. Stone coming in contact with structural work shall be back-checked as indicated on the approved shop drawings. Stones resting on structural work shall have beds shaped to fit the supports as required.

E. Where stone facing adjoins steel or concrete structural members,

the depth of stone shall be such that will allow not less than 1 inch between the back of the stone and the structural members.

F. Holes and sinkages shall be cut in stones for all anchors, cramps, dowels, etc., as per industry standard practices. Stones that cannot be handled manually will be provided with a clamp hole. Size and location of the clamp hole shall be furnished by the Contractor to the stone supplier in ample time for the stone supplier to drill the required hole during the course of normal fabrication. No holes for handling devices will be provided in exposed surfaces.

G. All miscellaneous cutting and drilling of stone necessary to accommodate other trades, will be done by the cut stone fabricator only when necessary information is furnished in time to be shown on his shop drawings and details, and when work can be executed before shipment. Cutting and fitting, due to job site conditions, will be the responsibility of the stone setter.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 SETTING - GENERAL

A. Setting of stone shall be in strict accordance with approved shop drawings for manufacturer, approved mockup and this specification.

B. To the extent possible, fabrication and assembly of stone shall be executed in the shop. Work that is not shop assembled shall be shop fitted.

C. Tolerance on planar misalignment across a joint shall be 1/16 inch. Tolerance on planar variation across entire spandrel panel assembly shall be +/- 1/4 inch.

3.03 STONE SETTING - SPECIFICS

A. All stonework on building facade shall be set in a full mortar bed with tooled and finished joints.

B. All stone shall be anchored and/or doweled as shown on the approved drawings, the anchors, dowels, etc. being inserted in mortar filled holes provided in the stone.

C. Wicks shall be placed in joints where moisture may accumulate, such as base of cavity walls, continuous angles, flashing, and the like.

D. Waterproofing with non-staining asphalt emulsion or vinyl lacquer all concrete surfaces, shelf angles, etc., against which limestone is to be applied.

3.04 CLEANING - GENERAL

A. After being pointed, the stone work shall be carefully cleaned, starting at the top, removing all dirt, excess mortar, stains and other defacements.

B. Stainless steel wire brushes or wool may be used, but the use of

other wire brushes or of acid or other solutions which may cause discoloration is expressly prohibited.

C. Cleaning operations shall not proceed until the erection of the various adjoining items of architectural metal has been completed. The cleaning of stone and masonry shall start at the top of the building and shall be coordinated with the cleaning of the architectural metals and brick work.

3.05 WASTE MANAGEMENT

A. Separate and recycle waste materials in accordance with the Waste Management Plan and to the maximum extent economically feasible.

B. Fold up metal banding; flatten and place in designated area for recycling.

C. Collect wood packing shims and pallets; place in designated area.

D. Place unused mixed mortar in designated locations where lower-strength mortar meets the requirements for bulk fill; for example, use as retaining wall footing ballast, cavity fill at grade, or underground utility pipe kickers.

E. Separate masonry waste and place in designated area for use as structural fill or in landscaping of the Project.

End of Section

SECTION 05 12 00

STRUCTURAL STEEL

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this section includes all labor, materials, equipment and services necessary to complete the structural steel work as shown on the drawings and specified herein, including, but not limited to the following:
   1. Furnish and deliver for installation by others, anchor bolts, bearing plates and loose lintels with complete instructions and templates to facilitate installation.
   2. Furnish and erect all columns, bearing plates, beams, girders, hangers, posts and all related connections (bolted and welded).
   3. Openings (unreinforced and reinforced) in structural steel to accommodate mechanical and electrical work.
   4. Shop painting and field touch-up painting.
   5. Erection bracing and supports, including steel wedges, shims or nuts required for leveling base plates.
   6. Lintels and angles attached to structural steel as shown on drawings.
   7. Unless specifically excluded, furnish and install all other items for structural steel work indicated on the drawings, specified, or obviously needed to make the work of this Section complete.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Installation of anchor bolts furnished under this section
B. Grout under base and bearing plates
C. Cast In Place Concrete
D. Installation of loose lintels furnished under this section
E. Metal decking
F. Miscellaneous metal work
G. Stair framing and hanger
H. Field painting of structural steel, except as specified herein
I. Fireproofing systems

1.4 QUALITY ASSURANCE

A. Except as modified by the City of New York Building Code and by this specification, comply with the applicable provisions and recommendations of the following codes and standards:
   1. AISC "Specification for Structural Steel Buildings" latest edition, as amended by RS10-5 of the NYC Building Code.
   2. AISC "Code of Standard Practice for Steel Buildings and Bridges" latest edition.
   3. AISC "Seismic Provisions for Structural Steel Buildings", latest edition.
   4. Industrial Fasteners Institute "Handbook of Bolt and Bolted Joints" latest edition.

5. Research Council on Riveted and Bolted Structural Joints "Specifications for Structural Joints Using ASTM Hi-Strength Bolts, ASTM A141 Rivets and ASTM A307 Unfinished Bolts" latest edition.
6. AISC "Specifications for Structural Joints Using ASTM A325 or A490 Bolts."
7. ASTM A6/A6M "Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use "
8. AWS D1.1, "Structural Welding Code" latest edition.
9. SSPC "SSPC Painting Manual, Volume 2, Systems and Specifications" latest edition.
10. New York City Building Code.

B. Qualifications for welding work shall be as follows:
1. Qualify welding procedures and welding operators in accordance with the NYC Building Code and AWS "Standard Qualification Procedure."
2. Submit certification that all welders to be employed in work are licensed by the NYC Commissioner of Buildings and are AWS qualified. If recertification of welders is required, retesting will be responsibility of structural steel subcontractor.

1.5 SUBMITTALS

1. Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement will be cause for rejection of any or all submittals.
2. As set forth in the General Conditions, Article 1.05.A, I and J, prepare and submit a fully developed submittal schedule; note review times that maybe set forth in Schedule "F" are deemed "average", for large submissions allow longer review times.
3. Attention is directed to Article 1.05.B for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".
4. The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Design Professional Team to approve these materials; the substitution request procedure shall still be enforced.

A. Submit shop drawings in accordance with the specifications as follows:
1. Show clearly all work, including relationship of structural steel to the adjacent work of other trades and to significant lines of finishes of other trades.
2. Do not fabricate or deliver work to the site before shop drawings have been reviewed, approved and returned by the Commissioner.
3. Prepare shop drawings in conformance with the best standards of the construction industry, and not less complete than indicated by the applicable procedures shown in "Detailing for Steel Construction," latest edition, published by AISC. Prepare shop drawings under the supervision of competent engineering personnel, licensed by the state in which the construction is to take place. During the preparation of shop drawings, and prior to submittal, coordinate

and cross check all shop drawings, including those prepared by subcontractors, for compliance with the Contract Documents.

4. Indicate clearly the size and grade of steel for each component. Identify rolled shapes, tubes and plates by using the standard designations used in "Load and Resistance Factor Design Manual of Steel Construction," Latest Edition, by AISC.
5. Indicate welds and nondestructive tests by using the symbols conforming to AWS A2.4 "Symbols for Welding and Nondestructive Testing." Where necessary for clarity, indicate welding procedure designations or other data in the tail of the welding symbol.
6. Show explicitly the type of connection used in each location, the grade, size, and number of bolts; the type, number, position, designation and orientation of each washer; and the size of each hole, whether slotted or round. Ensure that adequate wrench clearance for correct bolt tightening is provided and note special bolt tightening sequences where applicable and necessary.
7. Show all camber dimensions in the shop drawings. Where specific camber is not shown in the drawings, note on each affected shop drawing that such members are to be fabricated with the natural camber up.
8. Show holes required for securing work specified in other sections to structural steelwork, as well as all holes required for passage through structural steelwork of work of other trades. Provide field work drawings for all such holes not shown in shop or erection drawings. Addition of, or change in size or location of openings will not be permitted without prior approval.
9. Make details in such a way as to avoid having steel, connections, bracing, bolts, etc., interfere with architectural details or in any way reduce the areas of shafts, openings, clearances, etc.
10. Detail and schedule cleaning and painting data and requirements, including specific indication of "no-paint" areas.
11. The use of the Engineer's or the Commissioner's electronic drawing files as a base for the erection shop drawings will be permitted at the request of the structural steel detailer upon completion and return of the waiver form. The use of the Engineer's or the Commissioner's electronic drawing files as a base for shop drawing details will be not be permitted. The structural steel detailer will be responsible for compatibility of the files with his hardware or software. The electronic files are not to be considered the contract documents, the design team makes no representation regarding the accuracy or completeness of the electronic files given to the structural steel detailer and their use will be at the structural steel detailers sole risk and without liability to the design team. The structural steel detailer shall remove the project title box and all references to the structural drawings including drawing numbers and structural drawing sections and details. The structural steel detailer shall also remove all reference to work not included in the steel contract. Show clearly the size and location of each member and the erection mark assigned to each member. Show each field connection with all data and details necessary for assembling the structure. Direct special attention to the possible need for special guying, bracing, or shoring to prevent deformation of existing or new structure due to stresses caused by erection procedures and equipment, by construction loadings, and by forces of natural phenomena.

12. Prepare, keep up-to-date, and submit a complete drawing index cross-referencing each assigned piece mark with the drawing number in which the piece is detailed. Detail drawings submitted without an up-to-date index and the applicable erection drawing(s) showing the location of each piece will be deemed an incomplete submission and will not be accepted as subject to any agreed shop drawing review schedule.
13. Prepare anchor bolt and base plate erection drawings containing complete location and placing details, including details of all templates. Provide anchor bolt erection drawings to the concrete trade in advance of applicable concrete work and in coordination with concrete construction sequence.
14. Direct the Commissioner's attention in writing to any proposed deviations from the Contract Documents, prior to the submission of shop drawings showing the proposed deviation. Submit requests for deviations on the structural steel contractor's letterhead. Deviations not identified, or identified only in letters of transmittal or in shop drawings or both, without the required written request, may not be accepted, and shall be sufficient cause for the Commissioner to return each shop drawing containing such deviations without further action. Acceptance of shop drawings containing deviations not detected by the Commissioner during shop drawing review shall not relieve the structural steel contractor from responsibility to conform strictly to the Contract Documents.
15. Prior to resubmission of shop drawings with additions or corrections, circle and identify all changes. Drawings submitted without each change being clearly identified are subject to return for resubmission.
16. Prior to making shop drawings for any portion of the work involving alterations to an existing structure, make all necessary field observations, measurements and surveys of existing conditions. If probes are required to accomplish such measurements, give timely notice where probes will be required.

B. Submit certified copies of each survey conducted by a surveyor licensed by the state in which the construction is to take place and employed by the structural steel contractor. Survey shall show elevations and locations of base plates and anchor bolts to receive structural steel, and final elevations and locations for major members. Indicate discrepancies between actual installation and Contract Documents.
C. Reports
   1. Submit certified copies of mill test reports for all steel furnished. Perform mechanical and chemical tests for all material regardless of thickness or use.
   2. Submit anchor bolt checking certification as required.
   3. Submit qualification certificates of all welders who will perform work on the project.
   4. Submit survey of erected steelwork as required.

1.6 DELIVERY, STORAGE AND HANDLING
A. Deliver materials to site at such intervals to ensure uninterrupted progress of work.
B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete, in ample time not to delay work.
C. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets,

platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

D. Do not store materials on structure in a manner that might cause distortion or damage to members of supporting structures. Repair or replace damaged materials or structures as directed.

1.7 TESTING AND INSPECTION

A. Controlled Inspection as required by the *NYC Building Code* of all structural steelwork in the shop and field will be performed by an inspection agency retained by the City of New York at no expense to the structural steel contractor. The inspection agency shall work under the direction of the Commissioner. The structural steel contractor shall provide the inspection agency with the following:
   1. Schedule of all work in both shop and field with at least ten days' written notice before commencement of either activity.
   2. A complete set of approved shop and erection drawings.
   3. Cutting lists, order sheets, material bills, shipping bills and mill test reports.
   4. Information as to time and place of all rollings and shipment of material to shops.
   5. Representative sample pieces as requested by the testing agency.
   6. Full and ample means and assistance for testing all material.
   7. Proper facilities, including scaffolding, temporary work platforms, etc., for inspection of the work in the mills, shop and field.

B. Each person installing connections shall be assigned an identifying symbol or mark and all shop and field connections shall be so identified so that the inspector can refer back to the person making the connection.

C. The following minimum criteria shall be adhered to in testing of welds and bolts:
   1. All welds and bolts shall be examined by visual means.
   2. 25% of all welds, selected randomly, shall be measured.
   3. 25% of all bolts, selected randomly, shall be checked with calibrated torque wrench.
   4. In addition, all welds subject to tensile stress shall be examined by the Ultrasonic Method for 100% of their length.
   5. 10% of all manual fillet welds shall be tested by the magnetic particle method.
   6. 1'-0" at each end of automatic fillet welds shall be tested by the magnetic particle method.
   7. 100% of groove welds shall be tested by the ultrasonic method.

D. Shop inspection will include examination of steel for straightness and alignment, fissures, mill scale, and other defects and deformities, as described in ASTM A6, examination of fabricated pieces for conforming with approved shop drawings, testing of bolts and welds, and inspection of shop painting. All shop welds shall be visually inspected and spot tested using Ultrasonic Method ASTM E114 and AWS, Section 6, Part C. The inspector shall identify all inspected welds.

E. Field inspection will include examination of erected steel for welding, proper fitting and tensioning of bolts, alignment, trueness and plumbness, touching-up of shop coat, level of billets and base plates.

F. Inspection of welding will be such as to assure that the work is within the quality requirements specified below and elsewhere in this section of the specifications and will include:

1. Ascertainment that the electrodes used for manual shielded metal-arc welding and the electrodes and flux used for submerged arc-welding conform to the requirements of this section of the specifications.
2. Ascertainment that the approved welding procedures and sequence are followed without deviation, unless specific approval for change is obtained from the Commissioner.
3. The testing agency shall be prepared to utilize the following approved methods of testing:
   a. Liquid penetrant inspection: ASTM E165.
   b. Magnetic particle: ASTM E709.
   c. Radiographic inspection: ASTM E94, E142, and E1032.
   d. Ultrasonic inspection: ASTM E114 and AWS, Section 6, Part C.

G. When defects are revealed, additional inspection by whatever method is deemed necessary by the inspector shall be performed to the extent necessary to assure that the full amount of defect has been located. No further work shall be done on the assembly or sub-assembly in question until all the necessary corrections have been made. Defects shall be repaired, using the same welding procedure that was used initially in making the weld, unless otherwise approved by the Commissioner. Inspection of the repaired weld shall be by the same method that was used to reveal the defect. A second repair of a defective area shall not be made without approval of the Commissioner.

H. Apparatus and procedure for measuring torque and tension in high strength bolts and for calibrating wrenches shall be furnished and maintained by the structural steel contractor, and shall be approved by the inspection agency. Wrenches shall be calibrated each day of the beginning of the work, each time the bolt size or length of pressure hose is changed, and at such other times as the inspection agency may direct. Periodic checks of high strength steel bolt connections will be made in the field by the inspection agency. The structural steel contractor shall maintain at all times during erection a manual torque wrench, and shall provide a laborer and scaffolding as required for the testing of connections by the inspection agency, and shall at his own expense, furnish such facilities and provide such assistance as may be required for proper inspection.

I. A distinguishing mark will be placed on all work that has been inspected and approved. Material or work that is not acceptable will be designated by words such as "REJECT" or "REPAIR" marked directly on the material or work.

J. Inspection of Shop Painting
   1. Visually evaluate surface preparation by comparison with pictorial standards in accordance with SSPC-Vis 1.
   2. Measure dry film thickness of each coat with a magnetic film thickness gauge in accordance with SSPC-PA 2.
   3. Visually inspect dried film for runs, sags, dry spray, overspray and missed areas.
   4. Repair defective or damaged areas in accordance with painting requirements specified. Architecturally exposed structural steel shall be free of runs and holidays. Make repairs to shop or field coat as directed.

1.8 COORDINATION REQUIREMENTS

A. The structural steel contractor shall coordinate the structural steel work with the work of other Contracts. Verify all dimensions and

details of this Contract and those of other Contracts that affect the work before proceeding. Any discrepancies shall be immediately reported to the Commissioner.

B. Be fully responsible for the accurate installation of the work. Any discrepancy that arises from the structural steel contractor's failure to execute the work in conformity to the drawings and specifications shall be properly remedied at the structural steel contractor's own expense and in a manner acceptable to the Commissioner.

C. Locate dimensionally on setting plans all anchor bolts, inserts, bearing and base plates, etc., and prepare and deliver all required templates and fully dimensioned setting plans in time for the proper execution of the work. Another contractor shall set anchor bolts. The structural steel contractor shall check all such settings for correctness after they have been cast in place, and before proceeding with erection work.

D. Report to the Commissioner and certify compliance with the above checking requirements in writing and indicate any inaccuracies found in the location of anchor bolts or inserts, and corrections, which must be made to their installation. Any inaccuracies not included in the report and found during or after steel erection shall be the responsibility of the structural steel contractor and the cost of corrective measures shall be borne by him.

E. Use base lines, benchmarks, or other standards for survey work that have been provided or verified by others. If permanent building benchmarks have been established, these will be used for field checking.

F. The structural steel contractor shall be fully responsible for all means, methods, techniques, sequences and procedures of construction. Coordinate with all other trades to insure that work of this section does not cause undue conflict. Ensure that location of erection devices such as cranes, derricks, booms or hoists, does not cause overstresses to steel frame, to work previously placed by other trades or to existing structures. When required, retain the services of a Professional Engineer to ascertain that erection devices do not create unsafe conditions or cause overstresses.

1.9 SUBSTITUTION

A. The Commissioner reserves the right to require substitute shapes of other sizes than those indicated on the drawings when it is apparent that the shapes specified cannot be furnished within the time required for the progress of construction. Make said substitutions without additional cost to the City of New York.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Structural steel wide flange and structural tee rolled shapes: ASTM A992
B. Channels, angles and plates: ASTM A36
C. Pipe: ASTM A501 or ASTM A53, Grade B
D. Hollow Structural Sections: ASTM A500, Grade B
E. High Strength Bolts: ASTM A325SC, with hardened washers
F. Unfinished Bolts: ASTM A307, with hexagonal heads and nuts
G. Filler metal for welding electrodes: ASTM A233 Class E70 Series
H. Structural steel primer paint: rust inhibitive primer conforming to TT-P-86, Type I; or Tnemec Exterior #10-99 or 88HS-555

I. Structural steel field paint for exposed members: Tnemec #530 Poly-ura-prime

PART 3 - EXECUTION

3.1 FABRICATION

A. All shop connections shall be welded or high strength bolted unless specifically shown otherwise. Fabricate work in shop in as large assemblies as practicable.

B. Camber: All beams, girders and other members shall be fabricated with natural camber up.

C. Mill column ends and bearing stiffeners to give full bearing over the cross section. Plane contact surfaces of bearing plates when required by the AISC Specifications. It is not necessary to plane bottom surfaces of plates on grout beds.

D. Drill or punch holes at right angles to the surface of the metal, not more than 1/16" larger than the connector diameter. Do not make or enlarge holes by burning. Drill material having a thickness in excess of the connector diameter and material thicker than 7/8". Holes shall be clean-cut without torn or ragged edges. Remove outside burrs resulting from drilling operations.

E. Provide holes in members to permit connection of the work of other trades. Use suitable templates for proper location of these holes. Steel requiring adjustment or accurate alignment shall be provided with slotted holes or full bearing shims as shown.

F. Provide holes, slots and openings required by other trades together with necessary reinforcing required. Use suitable templates for proper location of these openings. All such openings shall be shown on the shop drawings. No change in size or location will be permitted without prior approval.

G. Manual flame cutting shall be done only with a mechanically guided torch. An unguided torch may be used provided the cut is within 1/8" of the required line.

3.2 CONNECTIONS

A. Provide connections as shown on the drawing exactly as detailed. Where connections are not detailed, the minimum connections shall comply with appropriate tables headed, "Framed Beam Connections" shown in the AISC "Manual of Steel Construction" unless otherwise noted on the drawings. Use high strength bolts or welds unless otherwise shown.

B. Proportion and detail all connections on shop drawings to resist forces shown on design drawings. If no reactions are indicated on design drawings, design connections for non-composite beams to resist the end reaction shown in the AISC tables for Uniform Load Constants for Beams. Connections for composite beams shall be proportioned to resist 150% of the above-mentioned tabulated load.

C. Bolting

1. Bolts shall be of a length that will extend not less than 1/4" beyond the nuts. Enter bolts into holes without damaging the thread.
2. Use high-strength bolts in friction as shown. Make high-strength bolted joints without the use of erection bolts. Bolt heads and nuts shall rest squarely against the metal. Where structural members have sloping surface, bolted connections shall be provided with beveled washers to afford square seating or framing for bolt

heads or nuts. Bring members tightly together with sufficient high-strength "fitting-up" bolts that shall be retightened as all the bolts are finally tightened. Manual torque wrenches will not be accepted for final tightening. Protect bolt heads from damage during placing. Final tightening of high-strength bolts shall be by properly calibrated power torque wrenches. Bolts that have been completely tightened shall be marked for identification.

D. Welding
   1. Do not begin structural welding until joint elements are inspected for surface preparation, fit-up, and cleanliness of surface to be welded and are then bolted or tacked in intimate contact and adjusted to dimensions shown on drawings, or both, with allowance for any weld shrinkage that is expected. No members are to be spliced without prior approval by the Commissioner.
   2. Pre-heat and interpass temperature shall be in accordance with Table 3.2 (including footnotes) of the AWS D1.1 Structural Welding Code, Latest Edition. The temperature shall be measured from the side opposite to that which the pre-heat is applied, where possible.
   3. All groove welds shall be continuous and full penetration welds unless otherwise shown on the design drawings. Welds made without the aid of a back-up bar shall have their roots chipped, ground or roughened out to sound metal from the second side, before welding is done from the second side.
   4. All welds shall be sound throughout. There shall be no crack in any weld or weld pass. Weld may be considered sound if it contains only slight porosity or fusion defects that are well dispersed.
   5. The heat, input, length of weld and sequence of weld shall be controlled to prevent distortions. The surfaces to be welded and the filler metals to be used shall be subject to inspection before any welding is performed.

3.3 SHOP PAINTING AND CLEANING

A. Remove all rust, scale, grease and other detrimental foreign matter in accordance with the SSPC Painting Manual - Specification SP-3, Power Tool Cleaning.
B. Immediately after surface preparation, apply structural steel primer paint where specified, in accordance with manufacturer's instructions and at a rate to provide dry film thickness of not less that 2.0 mils. Use painting methods that result in full coverage of joints, corners, edges and exposed surfaces. Use type of primer paint as specified in the "Materials" Section of this Specification. Apply two coats to surfaces that will be inaccessible after erection.
C. Paint all structural steel in accordance with the foregoing specification, except as follows:
   1. Steel that is to receive spray-on fireproofing.
   2. Within 2" of field welds or welds made after paint is applied.
   3. Within 3" of high strength friction bolts.
   4. Machined surfaces and threaded parts required for adjustment of the structure. Protect these with suitable rust inhibiting coating that may be removed after final installation of the work so that proper finished coatings may be applied.
D. Field Painting
   1. After erection, all damaged areas in shop coat, exposed surfaces of bolt heads, nuts and washers, and all field welds and unpainted areas adjacent to field welds and high strength bolts shall be

painted with a "touch-up" application of the same paint used in the shop coat and then painted with the same paint used for shop coat tinted another color. Retouch in field, any scraped, abraded, and unpainted surfaces. Painting shall be as specified for shop coats.

2. Structural steel that is to support mechanical equipment and will be left exposed to the weather in the finished project shall be field painted with one coat of Tnemec #530 Poly-ura-prime at 2.0 - 4.0 mils DFT. Apply finish coat of Tnemec 161 Tneme-Fascure at 3.0 - 5.0 DFT. These applications shall be the responsibility of the structural steel contractor.

3.4 ERECTION

A. Verify field measurements prior to start of erection. Check the alignment and elevation of all column supports and location of all anchor bolts with transit and level instruments before starting erection. Notify the Commissioner of any errors. Obtain the Commissioner's approval of methods proposed for correcting errors prior to proceeding with corrections and erection.

B. Column billets and bearing plates shall be supported and aligned on steel wedges, shims, or leveling nuts. After the supported members have been plumbed and properly positioned by instrument and anchor nuts tightened, the entire bearing area under the plate shall be filled with grout specified in another Section. Wedges and shims shall be set back a minimum of 3/4" from the edges of plates and shall be left in place. Leveling plates are not permitted.

C. Plumbing, Leveling and Bracing

1. Structural steel shall be erected true and level, and temporary bracing shall be introduced wherever necessary to provide for all loads to which the structure may be subjected, including equipment and the operation thereof. Such bracing shall be left in place as long as may be required for safety. No welding shall be done or bolts drawn up tight until structural steel has been properly aligned. Obtain approval for guy locations to assure lack of interference with operations of other trades.

D. Drifting

1. Light drifting necessary to draw holes together will be permitted, but drifting of unfair holes will not be permitted. Twist drills shall be used to enlarge holes as necessary to the next larger size; use next larger size bolts as required. Reaming that weakens the members, or makes it impossible to fill the holes properly or to adjust accurately after reaming, will not be allowed.

END OF SECTION

SECTION 05 31 00

METAL DECKING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this section includes all labor, materials, equipment and services necessary to complete the metal deck work and headed shear studs as shown on the drawings as specified herein, including, but not limited to the following:
   1. Floor deck
   2. Headed shear studs
   3. All necessary deck supports and reinforcing other than principal framing members including diagonals at columns, angles, plates, and etc.
   4. Flashing, cell closures, closure plates and sheet metal work required to contain concrete.
   5. Ceiling hanger tabs at new decking composite with concrete where new suspended ceilings are required.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete and reinforcement over decking
B. Structural Steel
C. Load Bearing Masonry
D. Shoring of metal deck where unsupported span exceeds the allowable
E. Ceiling systems
F. Mechanical and electrical where supported from deck
G. Fireproofing systems
H. Sheet metal work

1.4 QUALITY ASSURANCE

A. Except as modified by governing codes and by this specification, comply with the applicable provisions and recommendations of the following codes and standards:
   1. American Iron and Steel Institute (AISI) "Specification for the Design of Cold-Formed Steel Structural Members".
   2. American Welding Society (AWS), D1.1 "Structural Welding Code" and D1.3 "Structural Welding Code-Sheet Steel".
   3. Steel Deck Institute (SDI) "Design Manual for Composite Decks, Form Decks, and Roof Decks".

B. The work under this section shall be performed by a fabricator and erector submitting conclusive evidence of having satisfactorily completed work of similar scope and of having the necessary skill, equipment, facilities and capacities to fabricate and perform the erection in accordance with the construction schedules and in full compliance with all requirements of the Contract Documents.

1.5 DESIGN REQUIREMENTS

A. Metal deck unit sizes and gages are indicated on the drawings. Gages indicated on the drawings are a minimum. Thickness of deck may be

required to be increased by deck manufacturer for loadings indicated on drawings.

B. Unit shall span over three or more supports except where steel layout does not permit.
C. Maximum allowable deflection under live load plus super imposed dead load shall not exceed (1/360) of the span or (1/4) inch whichever is less.
D. Deck shall be sized as unshored. Shoring of deck is not permitted unless specifically shown in areas on the drawings.
E. Use of piercing, non-piercing, and integral hanger tabs is not permitted at roof deck.
F. Units included in a fire rated assembly must be classified in appropriate UL design and MEA approvals.

1.6 SUBMITTALS

1. Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement will be cause for rejection of any or all submittals.
2. As set forth in the General Conditions, Article 1.05.A, I and J, prepare and submit a fully developed submittal schedule; note review times that maybe set forth in Schedule "F" are deemed "average", for large submissions allow longer review times.
3. Attention is directed to Article 1.05.B for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".
4. The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Design Professional Team to approve these materials; the substitution request procedure shall still be enforced.

A. Samples of each type of decking material. Product data, including manufacturers' specifications, load tables, section properties and installation instructions for each type of decking and accessories.
B. Shop drawings for all installations showing gauges, type of deck, any shoring required, where located, welding details necessary for fabrication to fit in place, and all accessories. Do not use reproductions of the Design Drawings.
C. Ceiling tab, fillers, closures and the like.
D. Certification of specification compliance.
E. Shop drawings showing exact placement of all headed shear studs connectors with respect to the flutes of the metal deck. Variation from the specified deck configuration may result in a decrease of the capacity of the studs, requiring more studs.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver material to site at such intervals to ensure uninterrupted progress of work.
B. Store materials to permit easy access for inspection and identification. Keep deck off ground, using pallets, platforms or other supports. Protect deck and packaged materials from corrosion and deterioration.

C. Do not store materials on structure in a manner that might cause distortion or damage to members of supporting structures. Repair or replace damaged materials or structures as directed.

1.8 COORDINATION REQUIREMENTS

A. Examine all work prepared by others to receive work of this section and report any defects affecting installation to the contractor for correction. Commencement of work will be construed as complete acceptance of preparatory work by others.
B. If the supporting beams are not properly aligned or sufficiently level to permit proper bearing of the steel decking units, the steel decking contractor shall bring the matter to the attention of the contractor for corrective action. The steel decking units are not to be placed until the necessary correlations are made.
C. Installation of the deck and shear studs will be inspected by the Commissioner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Galvanized Composite Steel Decking: Conforming to ASTM A611 or A653 with minimum yield strength of 33,000 psi. Coating conforming to ASTM A653 G90. Deck shall have deformations specifically designed to produce composite action between the deck and the concrete slab by mechanical bond. The Contract Documents indicate required section profile and minimum gauge. Contractor shall provide heavier gauge if the minimum gauge indicated is not sufficient to support construction loads as unshored forms and/or total load as indicated on the drawings based on the composite section.
B. Galvanized Non-Composite Steel Decking: Galvanized Steel Decking: Conforming to ASTM A611 or A653 G90 with minimum yield strength of 33,000 psi. The Contract Documents indicate required section profile and minimum gauge. Contractor shall provide heavier gauge if minimum gauge indicated is not adequate to support total loads as shown on the drawings.
C. Anchor clips, vent clips, welding washers, flashing, saddle plates, sump pans, other accessories shall be those types, sizes, and configurations recommended by the decking manufacturer, and shall be of the same material and finish as the deck units.
D. Cell closure flexible strips, and fillers shall be of material in compliance with applicable building code governing class of construction.
E. Provide metal closure strips at edges of all slabs and openings, which serve as pour stops for concrete. Gauge shall be sufficient to span or cantilever from steel beams.
F. Roof sump pans: Fabricate from a single piece of galvanized sheet steel of the same quality as the deck units; not less than nominal 0.0747" (14 gauge) thick before galvanizing; with bottoms level after erection and sloping sides to direct water flow to the drain, unless otherwise shown. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3" wide. Recess pans not less than 1-1/2" below the roof deck surface, unless otherwise shown or required by deck configuration. Weld to deck at maximum 12" o.c.
G. Headed studs for shear connectors shall be ¾" (unless noted) diameter manufactured from cold drawn wire and conforming to ASTM A108, Grades 1010 thru 1020. Studs shall be manufactured by Nelson or KSM.

2.2 MANUFACTURE

A. Supply manufactured deck units in accordance with the applicable requirements of the Steel Deck Institute's "Design Manual for Floor Decks and Roof Decks".
B. Deck shall be manufactured by one of the following:
   1. Inland Steel Co.
   2. Wheeling Corrugating Co.
   3. Cyclops Steel Corp.
   4. United Steel Deck, Inc.

2.3 FABRICATION

A. Fabricate deck units in accordance with the AISI's "Specification for the Design of Cold-Formed Steel Structural Members" and accepted shop drawings. Fabricate deck units to the sizes and configurations indicated and cut to lengths which will span not fewer than three supporting members; use only full length units at overhang where indicated in a manner that laps fit tightly. Locate openings for penetrations where indicated and provide support framing and edge reinforcement for all openings.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspection of the metal deck and shear stud installation will be performed by an inspection agency retained by the City of New York at no expense to the contractor. The inspection agency shall work under the direction of the Commissioner. Contractor shall provide the inspection agency with the following:
   1. Schedule of all work in both shop and field with at least ten days written notice before commencement of either activity.
   2. A complete set of approved shop and erection drawings.

3.2 ERECTION

A. The erection of the steel decking shall be performed according to the manufacturer's standards. Erection shall closely follow the erection of structural steel.
B. The steel decking units shall be placed on the supporting steel framework and adjusted to final position before being permanently fastened. Each unit shall be brought to proper bearing on the supporting beams.
C. Decking units shall be fastened to the steel framework at ends of units and at all intermediate supports by ¾" diameter puddle welds spaced not more than 12" o.c. across width of unit. Deck shall, where possible, span 3 or more supports.
D. The side laps of adjacent units shall be fastened by approved method (to be shown on shop drawings) between supports at intervals of 3 feet between supporting beams. End laps of sheets shall be a minimum of 2" inches.
E. All welding shall be performed by competent experienced welding mechanics. All welds, shall be given a protective coat of paint as specified in painting article of section 051200.
F. All abraded or damaged protective surfaces of steel decking work shall be touched up with a protective coat of paint by this contractor as erected.

G. At composite deck with concrete, metal hanger tabs shall be installed at all panel sidelaps 24 inches o.c., longitudinally 24 inches o.c. to create a grid nominally 24 inches by 24 inches. Tabs shall be 18 gauge minimum, capable of supporting the specified ceiling, tabs shall be a minimum of 18 gauge capable of supporting ceiling and all other suspended loads or 200 pounds, whichever is greater.

H. All unframed deck openings in composite deck with concrete larger than 6" shall be reinforced as follows:
   1. Holes 6" - 12"/perpendicular to deck span, 16 gauge flat sheet extending 6" beyond hole on all sides.
   2. Holes 12" - 24"/perpendicular to span, 12" max/parallel to span: C4 x 5.4 channels on flat, each side, perpendicular to deck span, extending a minimum of 3 ribs beyond opening.
   3. Openings larger than these dimensions require supplemental floor framing.
   4. All reinforcement shall be welded to the topside of deck.

I. All unframed openings in roof deck shall be reinforced as follows:
   1. Holes less than 8": 18 gauge flat sheet extending 8" min. beyond hole in all directions.
   2. Holes 8" - 13": 16 gauge flat sheet extending 8" min. beyond hole in all directions.
   3. Holes greater than 13" require supplemental floor framing. Notify engineer.
   4. All reinforcing shall be welded to the topside of deck. Reinforcing plate shall extend at least 3" beyond next full metal deck rib.

J. Headed shear studs shall be installed by welding through metal deck onto beam below. Automatic welding machinery of approved design, amperage, duration of current, etc., shall be used. Studs shall be tested by testing laboratory in accordance with AWS Procedures for Bend Test; replace all studs that do not pass test.

3.3 CLEANING UP

A. Remove all equipment, unused materials and debris from the site immediately upon the completion of this work.

END OF SECTION

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SECTION 05 40 00

COLD FORMED METAL FRAMING

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all cold formed metal framing work for this project as required by the schedules, keynotes and drawings, including structural engineering services provided by the cold-formed metal framing fabricator.

NOTES: Coordinate with Section 06 00 00 for plywood wall and floor sheathing, protection and Sections 09 24 00 and 09 29 00 for finish requirements.

1. Furnishing, fabrication, assembly, delivering and erection of all light metal framing including studs, tracks, bracing, sills, headers, joists, bridging and all accessories as required by the conditions of construction, details, these specifications and stated design criteria.
2. Provide light metal framing backup systems for portland cement stucco walls at all locations indicated on the drawings and/or required by the conditions of construction, details, these specifications and stated design criteria.
3. Provide all required angles and other shapes as well as fixed and adjustable clips, receivers and like attachment devices all attached to light metal framing required for the securing of framing members and/or panels to base structural framing.
4. Provide "C" joist framing system complete and joist hangers secured to steel spandrel for support of plywood floor decking for new floor construction.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 05 12 00 - Angle, clips, lintels, etc. as shown on the structural drawings attached to said framing.

1.04 QUALITY ASSURANCE

A. All fabrication and erection of Light Metal Framing shall be done by a subcontractor who has not less than 3 years experience in Light Metal Structural Framing.

B. Except as otherwise specified herein, perform work in accordance with specifications noted below, including latest editions of applicable specifications, codes, and standards cited therein, and latest applicable addenda and supplements. Copies of these items shall be kept available in shop and field.

1. American Society for Testing and Materials (ASTM), Standard

Specifications and Methods of Testing.

a. ASTM A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
b. ASTM A 1003 - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
c. ASTM B 633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
d. ASTM C 955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.
e. ASTM C 1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
f. ASTM C 1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.

2. American Iron and Steel Institute, Specification for the Design of Light Gage Cold-Formed Steel Structural Members and Light Gage Steel Design Manual.
3. American Welding Society (AWS D.1.3), Code for Arc and Gas Welding in Building Construction and Recommended Practice for the Spot Welding of Low Carbon Steel.
4. American Institute of Steel Construction (AISC) Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, Also Code of Standard Practice for Steel Buildings and Bridges.

C. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing laboratory. Products used in the assembly shall carry a classification label from the testing laboratory.

D. Manufacturer - Use Mill Certified Prime Steel to manufacture framing members, but if prime steel is not employed, tests for compliance of ASTM C 645, ASTM C 955 and the AISI Specification for the Design of Cold-Formed Steel Structural Members should be done in conformance with ICBO criteria (see ICBO, Acceptance Criteria for Steel Studs, Joists and Tracks).

E. Mill Certificates for each framing member shall be provided at the time of shipment indicating the following information:
1. Bare metal thickness, measured to 1/1000 in.
2. Yield strength of steel.
3. Tensile strength of steel.
4. Total elongation of steel in 2 in. gauge length.
5. Chemical analysis of steel.
6. Coating thickness, measured by mass or thickness.

F. Pre-Installation Meeting:
1. Convene meeting at project site within one week of scheduled start of installation with representatives of the following in attendance: Commissioner, Architect, General Contractor, and metal framing Sub-Contractor.
2. Review substrate conditions, requirements of related work,

installation instructions, storage and handling procedures, and protection measures.

3. Keep minutes of meeting including responsibilities of various parties and deviations from specifications and installation instructions. Distribute minutes to attendees within 72 hours.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Certification of Specification Compliance.
B. Linear and piece samples of all work to be included as part of this Section.
C. Shop drawings showing dimensions, layout, location and details of all shop and field splices and connections of members, including weld and connector sizes and spacings, and all loose, shop assembled or field connected members. Piece details shall show principal lines of all abutting or connecting members. Shop drawings shall show all bridging, bracing, accessories and anchorage details, and shall identify all materials.
D. Complete erection drawings referencing all items detailed at date of submission and identifying erection methods and sequence of operation.
E. Quality Assurance/Control Submittals:
    1. Qualifications: Proof of manufacturer, installer, and welder qualifications.
    2. Mill certificates signed by framing member/accessory manufacturer certifying compliance with material requirements.
    3. Welder certificates.
    4. Manufacturer's Installation Instructions for framing members and framing accessories.
    5. Qualification Data: For NYS Licensed Professional Engineer.
F. Material Safety Data Sheet (MSDS) must be submitted for each

product.

G. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
   1. Steel sheet.
   2. Expansion anchors.
   3. Power-actuated anchors.
   4. Mechanical fasteners.
   5. Vertical deflection clips.
   6. Miscellaneous structural clips and accessories.

1.06 ENGINEERING/DESIGN CRITERIA AND REQUIREMENTS

Full engineering calculations signed and sealed by a Professional Engineer licensed in the jurisdiction and who is experienced in providing the engineering services of the kind indicated which are defined as those performed for installations of light gauge steel systems that are similar to those indicated for this project in material, design, and extent showing conformance to the following engineering data:

1. Description of design criteria.
2. Engineering analysis depicting stress and deflection (stiffness) requirements for each framing application.
3. Selection of framing components, accessories and welded connection requirements.
4. Verification of attachments to structure and adjacent framing components.

A. Live Loads: 100 pounds per square foot on horizontal surfaces.
B. Horizontal Deflection, Floors or Roofs: 1/240 span, total load or 1/360 span, live load.
C. Wall Deflection: Horizontal out-of-place deflection for veneer surfaced walls shall not exceed **L/720 maximum under any combination of design loading at masonry veneered walls.** Deflection calculations shall be based upon studs acting alone and shall neglect any contribution of the veneer or sheathing to the stiffness of the panels.
D. Dead Loads: as required by design.
E. Seismic Loading: IBC, Applicable Sections.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Members and panels shall be loaded and unloaded with power or hand hoisting equipment. IN NO CASE SHALL SAME BE DUMPED FROM TRUCKS.
B. All members and/or panels that are bent shall be returned to shop for proper straightening and/or replacement.
C. Handling at site in sorting and piling shall be done with precaution to prevent abrasion of shop coat and bending of members and panels.

1.08 DEFINITIONS

A. Prime Mill Certified Steel: Steel ordered by the stud manufacturer and produced by the mill specifically for making cold formed steel

framing. Mill test reports for mechanical and physical properties are included with shipment of the steel from the mill.

B. Re-rolled Steel: Steel that undergoes additional cold reduction after it has been produced by the mill.

1.09 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.
   2. Water-soluble.
   3. Can be cleaned up with water.
   4. Non-flammable.
   5. Biodegradable.
   6. Low or preferably no Volatile Organic Compound (VOC) content.
   7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
   8. Manufactured without compounds that contribute to smog in the lower atmosphere.
   9. Do not contain methylene-chloride.
   10. Do not contain chlorinated hydrocarbons.
   11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. Materials shall be as manufactured by:
   1. ClarkDietrich Buildings Systems.
   2. Consolidated Fabricators Corp.; Building Products Division.
   3. Custom Stud, Inc.
   4. Innovative Steel Systems.
   5. MarinoWare; a division of Ware Industries.
   6. SCAFCO Corporation.
   7. Southeastern Stud & Components, Inc.
   8. Steeler, Inc.
   9. Super Stud Building Products, Inc.
   10. United Metal Products, Inc.

   or approved equal.

B. 16 gauge (0.057 inches) members and heavier: ASTM A 653, SQ, Grade 50, Class 1; galvanized, ASTM A 924, G-60 coating.

C. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

D. Stud systems shall be color coded (painted ends) to the following format:

Weight	**Color**	**Weight**	**Color**
16 Gauge (0.057")	Green	14 Gauge (0.071")	Orange
12 Gauge (0.102")	Red		

2.02 FABRICATION CRITERIA/MISCELLANEOUS: All "LMF" members shall be fabricated of galvanized steel as above in suitable gauges to fit locations as developed through the design process outlined in 1.05 herein.

A. Studs: gauge to fit conditions; minimum 18 (0.045").

B. Tracks: Unpunched, minimum 18 gauge or as required to fit design conditions.

C. C-Joists: Minimum 12 gauge, equivalent to stress grade douglas fir 2x10's.

D. Bridging: Unpunched channels in minimum 16 gauge; let in "C" channels as detailed and/or designed as per 1.05 herein. Flat strapping permitted for "exterior application" on single framed walls; interior application on double framed walls.

E. Structural Steel Shapes: ASTM A 36; galvanized where acting as lintels and/or reliving angles.

2.03 ACCESSORIES

A. Welding electrodes shall conform to AWS requirements for welding low carbon steel. Manufacturer to furnish instructions with each container of electrodes giving recommended voltage, amperage, polarity if direct current, for all uses and positions for which electrode is suitable.

B. Fasteners: As recommended by Light Metal Framing Manufacturer for intended usage.

1. Mechanical Fasteners, ASTM C 954, corrosion-resistant self-drilling threaded steel drill screws of sufficient size to insure the strength of the connection and as indicated in the drawings by the designer.

2. Powder or Power Actuated Fasteners of type suitable for the intended application, fabricated from corrosion-resistant material.

3. Expansion Anchors fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 3 times the design load.

C. Framing Accessories - ASTM C 955, Provide all accessories including, but not limited to tracks, bracing, bridging and blocking, attachment clips, web stiffeners, gusset plates, vertical slide clips, deflection track, kickers, backing, anchors and fastening devices as indicated in the drawings or as required for a complete and proper installation of the system.

D. Loose fill insulation: Batt material as specified in Section 07 21 00.

2.04 Balance of materials required for the work of this section shall be as specified elsewhere herein.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous

elements.

3.02 DESIGN AND FABRICATION

A. Except as otherwise specified, shown or called for on the drawings, referenced Standard Specifications shall govern design, fabrication, handling and erection of all materials provided under this Section.

B. Architectural clearances shall be strictly maintained, check against all other drawings and details. No framing members, connections, etc. shall project from walls or into openings.

C. Workmanship shall be equal to best practice in modern structural shops.

D. All members to be straight and true, necessary flattening or straightening to be done by process not injurious to material.

E. All required welding shall be by qualified operators in accordance with applicable AWS code. Welds exposed to view shall be neat and straight without grinding.

F. Finished members and panels shall be free from twist, bends, or open joints, and all members shall be straight and true to line.

G. Shop attachments of similar materials shall be welded, and dissimilar components by welding, bolting or screws as approved. No friction fit, wire tie, clamps or other unspecified method of attachment will be permitted unless approval is granted prior to operation. Shop splices and connections shall be butt or fillet welded unless otherwise individually approved. No splices shall be permitted in members carrying compression loads.

H. Studs shall be of size shown and/or required by drawings and intended use. Three stud buildup at all corners for sheathing and/or finish board attachment. Double studs at sides of all wall openings, cutting inside stud to receive headers. Reinforce headers as required. Cross bridge all walls at uniform intervals between tracks and headers at spaces as may be required to comply with Code and loading criteria. Provide diagonal corner bracing, full story height, at exterior assemblies, or other effective permanent bracing against racking. Bracing shall be either let-in, rodded or by other acceptable means to permit smooth outside and inside faces.

Diagonal and lateral bracing shall be installed as required to insure total compliance with wind loading specified in Part 1 of this Section. Sheathing, bridging and/or gypsum boards shall <u>not</u> be relied upon for any contributory structural action.

I. All members used in the work of this section shall have dimensions, weights and arrangements shown on approved engineering shop drawings. All members provided shall be consistent with architectural detail and with strength and stiffness of approved design.

J. Where shown and/or required by conditions of the work, provide all necessary holes and other cutting and all lugs, clips, connections, etc. necessary for the connection or passage of work of other Trades.

K. Materials shall be free from scale, pits and rust. Clean all

material before applying one shop coat of rust resisting red zinc chromate primer, either baked on or air brush applied. Galvanized materials will not require primer. Omit or remove paint from areas to be welded. All shop welds shall be touched up with paint furnished by manufacturer of shop coat except that galvanized welds shall be painted with spray on aluminum paint.

L. Provide loose glass fiber insulation equal to that specified in Section 07 21 00 in all doubled and nested stud and header systems which will not be accessible to insulation contractor after fabrication.

M. Provision for vertical structural movement within frame shall be as required by conditions of construction and shall be provided by use of deflection tracks or slotted connectors to structural framing as applicable to particular installation. Connect studs to vertical slide clips attached to continuous angles or supplementary framing anchored to the building structure. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and proper curtainwall framing system. **Connection of vertical movement clip to the framing and structure shall be designed by a licensed engineer prior to installation.**

3.03 ERECTION

A. All light metal framing shall be erected by approved methods, using equipment of adequate capacity to perform all work safely.

B. Floor system of building shall not be used as support for any equipment required for hoisting of this work.

C. Any and all damage to surrounding construction shall be repaired as required at this Contractors' expense.

D. Fasten all light metal framing securely in place prior to subjecting them to any construction loads. All work shall be erected plumb, level and to dimensions and elevations indicated, using leveling instruments and bobs. During erection, install steel cables with turnbuckles in sufficient number to prevent distortion and damage to frame work due to wind or erection forces. Use cables to plumb and align work. Leave cables in place until sufficient masonry or cross partitions have been placed to insure lateral stability of the building.

E. All field connections on LMF shall be welded and subject to the following:

1. All field made welds shall be thoroughly slagged upon completion by the welder to permit proper inspection.
2. After approval, welds shall be touched up in accordance with Paragraphs 3.02.K and 3.04.A and B before covering with other materials.

F. Support angles, lintels and like structural steel members supporting other building elements shall be welded to each stud with welds of sufficient strength to safely support loads imposed on same. Angles shall be discontinuous at expansion and control joints. Angles shall be straightened after galvanizing and shall be straight and true prior to attachment. NO SHIMMING OF RELIEVING ANGLES WILL BE PERMITTED.

G. Tracks shall be securely anchored to supporting structure not over

24 inches on center with power driven fasteners of approved design, but in no case less than two fasteners per piece of track.

H. Joists shall have bearing of sufficient area as required by imposed loads.
   1. Install bridging as soon as joists are erected and before any construction loading is applied.
   2. Bridging shall be adequate to safely support top and bottom flanges against lateral movement during and after construction.
   3. Joists at ends of panels shall be braced laterally by anchors or ties at each line of bridging.
   4. Bridging shall be not less than 3/4 inch, 16 gauge channels of proper length to fit joist spacing.
   5. Bridging shall be spaced not more than L-109T, when L equals spacing of bridging in inches and T equals least radius of gyration from property tables.
   6. Holes in joists shall be lined up to facilitate straight runs of pipe and conduit.

3.04 ERECTION TOLERANCES
   A. Install framing members to a maximum allowable variation from plumb, level, and true to line of 1/8 in. in 10 feet (1:960).
   B. Space individual framing members +/- 1/8 in. from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finish materials.

3.05 STRUCTURAL MOVEMENT ISOLATION
   A. Isolate steel framing from building structure at locations designated to prevent transfer of vertical loads while providing lateral support.
   B. Connect studs to vertical slide clips attached to continuous angles or supplementary framing anchored to the building structure.
   C. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and proper curtainwall framing system.
   D. Connection of vertical movement clip to the framing and structure shall be designed by the LMF engineer and reviewed by a project structural engineer prior to installation.

3.06 FIELD PAINTING
   A. No field painting of LMF is required except touching up of field welds and abrasions of shop coat.
   B. All touchup shall be done with materials as noted in Paragraph 3.02.K of these specifications.
   C. All touchup shall be completed before placing of wall sheathing, insulation, roof and/or floor decking and interior finish.

3.07 FIELD QUALITY CONTROL
   A. Testing: City of New York will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
   B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Commissioner.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.08 WASTE MANAGEMENT

A. Collect offcuts and scrap and place in designated areas for recycling.

End of Section

SECTION 05 50 00

METAL FABRICATIONS - MISCELLANEOUS/ORNAMENTAL METALS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all miscellaneous and ornamental metal work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide new metal non-slip tread/nosing to existing concrete egress stairs "A", "B" and "C". Material shall be similar and equal to Wooster (500-NG); Amstep (500) or Balco.
2. Modify and extend for code compliance wall mounted railing systems at existing stairs "A, B and C"; remove and replace existing center railing with new guard rail, handrail and mesh infill at these stairs; coordinate with Section 10 22 13 for wire mesh work.
3. For reconstruction of existing elevator bulkhead, provide new HDG caged ladder.
4. Provide channel and angle door frames at replaced overhead operating door units including angular protection of track assemblies as required to insure free and permanent operation. Coordinate with Section 08 33 30.
5. At entry court, remove existing raised curbs and platforms, patch existing surface and provide new "stair, platform and railings" on each side.
6. Provide new stair, platform and railing system for access to Office 110.
7. Provide new stair and railing system from Office 113.
8. Provide new stair, platform, ramp and railing systems from Corridor 217 to Storage 202.
9. Provide trench grating, form boxes and frames at entrance on Flushing Avenue, coordinate with Section 03 30 00 for setting of frames and boxes.
10. Perform all drilling and tapping required for attachment of this work to the work of others.
11. Protect all dissimilar materials.
12. Perform all shop, prime and field touchup painting operations.
13. Provide miscellaneous gratings, curb angle frames and the like as shown and/or required to complete the work.
14. Provide any other miscellaneous angles, channels, plates or shapes indicated or required for the proper installation of the work as shown, including all clips, anchors, bolts and the like as required to secure the work of this section to

adjoining work.

15. Provide prefabricated or shop built wire mesh system with gates to provide "cross" connection between Stairs A and B at 3rd floor so as to provide legal means of egress. Coordinate with Section 10 22 13 for wire mesh work.
16. Install "#10 wire mesh cage and door" at Stairs A, B and C as shown so as to prevent travel to basement in case of an emergency. Provide panic device on basement side of cage door; coordinate with Sections 08 71 00 and 10 22 13 for material.
17. Provide miscellaneous railings as required at openings and the like.
18. Provide bollards as indicated on the drawings.

NOTE: All metal work exposed to the weather or subjected to moisture shall be hot-dipped galvanized after fabrication or "zinc-rich" coated after proper preparation in accordance with the requirements of Part 2 of this Section.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 02 41 00 - Demolition
B. 03 30 00 - Concrete Patching
C. 10 22 13 - Wire Mesh Partitions

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.
B. Coordinate work with that of all other trades affecting, or affected by work of this Section. Cooperate with such trades to assure steady progress of all work under Contract.
C. The work under this Section shall be performed by a Fabricator and Erector acceptable to the Commissioner. The Fabricator and Erector shall submit conclusive evidence of having satisfactorily completed work of similar scope and of having the necessary skill, equipment, facilities and capacity to fabricate the work and to perform the erection in accordance with the construction schedules and in full compliance with all requirements of the Contract Documents.
D. Coordinate installation of anchorages for metal fabrications. 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.
E. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop drawings of all items to be fabricated and installed. Show dimensions and details of all items. Verify dimensions and correlate metal work with adjoining work. Obtain approval of shop drawings before fabrication.
B. Samples of all manufactured items.
C. Certification of Specification Compliance.
D. This Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.
E. Material Safety Data Sheet (MSDS) must be submitted for each product.
F. Contractor shall hire a professional engineer, licensed in the jurisdiction to design all structural components and members of all railings, hangers, anchors, struts, tie-backs, bracing and like elements required to complete the work of this project as related to miscellaneous and ornamental metal operations all in accordance with the governing Building Code and subject to approval by the Commissioner. Coordinate work with Section 05 12 00.
G. All sealed and signed structural calculations shall be submitted to the Engineer of Record for his review and approval.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Stock commercial methods, materials, products, patterns and fabrication methods meeting requirements of this Specification and conforming substantially to details and design indicated on Drawings will be accepted. See Drawings for locations, sizes and details not in this section.
B. All connections shall be securely and neatly screwed, welded, tenoned, or riveted together with dowels or countersunk rivets and dressed flush. All surfaces shall be dressed smooth and be free

from mill marks or imperfections. Joints shall be tight and inconspicuous without the use of painting or caulking. Permanent connections shall be riveted or welded where practicable.

C. Welding shall comply with the applicable current standards, specifications, and codes of the American Welding Society. Welds shall be continuous except where spot welding is specifically permitted by the Commissioner. Where exposed, welds shall be ground to a smooth surface.

D. All units shall be properly laid out and spaced between terminals so that there shall be no cutoff or other uncertain finish.

E. Joints in exterior work shall be made watertight. All miters shall be cut and finished to a perfect fit.

F. Necessary ribs, brackets, fillets and other reinforcement in cast work shall be cast integrally with the main body of the work. Castings shall be sound and free from warp or defects impairing strength or appearance. Exposed surfaces shall have smooth finish and sharp, well defined lines and arrises. Joints shall be machined to close fit.

G. All rolled shapes shall be carefully straightened and shall be free from twist before the start of fabrication. All exposed fastenings shall be evenly spaced.

H. Do all cutting, drilling, fitting and work of a similar character required in fitting and setting the materials in place, and in fitting of this work to the adjoining work of other trades.

I. Provide connecting members, bolts, anchors, clip angles, rivets, screws, expansion bolts, etc., as required for the work of this Section, and as necessary for the attachment of other materials to the work, and not specified in other sections.

J. All metal items which are to be used on the exterior or placed in exterior walls shall be hot dipped galvanized after fabrication.

K. All connecting members, bolts, anchors, etc., which are to be covered with masonry shall be installed as far as practicable as the work progresses, so as to avoid cutting or drilling.

L. Bolting, where permitted, shall be done with proper size bolts with nuts drawn tight and for permanent connections, with threads upset.

M. All operative items shall be carefully adjusted and left in satisfactory working order.

N. Where anchors and fasteners are not fully detailed, their sizes, forms, attachment and location shall be such as to conform to the best shop and industry practice. Anchors shall have protective coat of paint as specified for shop coats.

1.07 WELDING

A. Welding must be performed by welders who have been certified by an approved Testing Laboratory. Submit proof of such certification to Commissioner before work is performed. Comply with AWS D1-1 "Structural Welding Code".

B. All welding which is done on steel and miscellaneous metal work to remain exposed in the finished work shall be "Architectural", i.e. - these welds must be ground smooth and show no seams. Rules and regulations governing all welding operations are set forth in the

DDC General Conditions and Addendum thereto.

1.08 PAINTING AND PROTECTION OF DISSIMILAR SURFACES

A. General preparation of metal surfaces to receive shop coating shall be in accordance with the methods outlined in the Steel Structures Painting Council Specification (SSPC) as may be applicable for intended exposure and location, and further;

B. Where aluminum components are in contact with, or fastened to dissimilar metals, except stainless steel or zinc, the dissimilar metals shall be given a coat of zinc chromate primer and a heavy brush coat of alkali-resistant bituminous paint. In permanently dry locations the metals may be separated by nonabsorptive plastic tapes or gaskets.

C. Aluminum in contact with, or built into masonry, concrete, or plaster shall be given a brush coat of alkali-resistant bituminous paint, or clear methacyrlic lacquer.

D. All ferrous metals shall be thoroughly cleaned and, except items to be encased in concrete, given a priming coat of approved shop paint. Surfaces shall be thoroughly covered and shall be free of runs or sags.

E. Items which support masonry or will be concealed in the finished work, except items encased in concrete, shall be field painted before erection of enclosing construction. Where shop coat is abraded or burned out by welding, the protection shall be the same paint as used for the shop coat, tinted to a different shade.

1.09 PERFORMANCE REQUIREMENTS

A. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss. Temperature Change (Range): 120 deg F ambient; 180 deg F material surfaces.

1.10 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.

8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. For fabrication of miscellaneous and ornamental metal work which will be exposed to view in the finished work, use only materials which are smooth and free from surface blemishes including pitting, seam marks, roller marks, trade names, roughness and other defects which will be apparent in the finished products.

B. Stock materials, patterns, products and standard methods of fabrication will be approved provided they conform to specified requirements and in general to the details shown.

C. Metals and accessory items shall conform to the current applicable recognized industry standards and the following grades.

2.02 FERROUS METAL WORK

A. Structural steel shapes galvanized when exposed to weather or moisture, prime coated for interior.
   1. W-Shapes: ASTM A 992/A 992M
   2. Channels, Angle-Shapes: ASTM 36/36M
   3. Plates and Bars: ASTM 36/36M

B. Steel plates for bending or cold forming - ASTM A 283, Grade C.

C. Carbon Steel Sheets - ASTM A 653, galvanized where exposed to moisture or weather.

D. Standard Steel Sheets - ASTM A 1011, galvanized when exposed to moisture or weather.

2.03 CAST AND WROUGHT MATERIAL

A. Cast Iron - ASTM A 48.

B. Trench Drains - Unit assemblies including trench cover and edge angles shall be similar and equal to Neenah Model ***R-4996-A1*** with cover design Type P.

C. Wheel Guards - Units shall be similar and equal to Neenah Model RSeries.

2.04 STEEL PIPE, TUBES, BAR STOCK

A. Steel Pipe - ASTM A 53, Type S, Grade B, galvanized for moisture and/or weather exposure. X-Strong and/or XX-Strong for bollards, railings and other items not satisfying criteria set forth above or required to satisfy safety and performance criteria.

2.05 STAINLESS STEEL MATERIALS

A. General - ASTM A 167, AISI Types 302/304 with #4 finish for exposed surfaces and mill for concealed surfaces unless otherwise required.

B. Rails shall be provided with ANSI B36.19 designation for standard

Schedule 40 pipe unless otherwise specified or required due to code conditions governing point loading restrictions.

2.06 FASTENERS, INSERTS, MISCELLANEOUS

A. Bolts & Nuts (Steel) - ASTM A 307.

B. Inserts - Threaded, wedge or slot type, galvanized castings, ASTM A 47 or A 27.

C. Fasteners and anchorage devices shall be of type, grade, class and style best suited for the respective purposes; galvanized, cadmium plated or stainless steel.

D. Use flat head Phillips type machine screws for exposed fastenings OR tamperproof devices as directed by the Commissioner and/or conditions of use.

2.07 DIAMOND PLATE

A. 1/4 inch, 4-way design, safety plate, medium pattern. Thickness subject to support system spacing and engineering of systems.

B. Treads of matching design with nosing and riser.

2.08 RETROFIT TREADS/NOSINGS FOR STEEL STAIRS - See Scope Description

2.09 PROTECTIVE COATING SYSTEMS

A. Galvanizing - ASTM A 153 for iron and steel hardware; A 123 for rolled, pressed and forged steel shapes, plates, bars and strips 1/8 inch thick and heavier; A 386 for assembled products; A 526 hot dip galvanizing in accordance with A 525, Designation G90 for all carbon steel sheet. Galvanize all structural steel tubing and pipe to ASTM A 123, and bolts, nuts and washers to A 153. Repair unacceptable galvanized surfaces in accord with ASTM A 780.

B. Protective coating - cold applied asphaltic mastic, SSPC-12, 30 dmt/coat.

2.10 FABRICATION, GENERAL

A. Welding - Comply with requirements of the American Welding Society (AWS).

B. All Welding: By licensed welder.

C. Welding Electrodes - E60XX classification of AWS A5.1.

D. Grind welds smooth.

2.11 SHOP PAINTING - (reference 09 90 00)

A. Ferrous metal primer - modified alkyd rust inhibitive material similar and equal to Tnemec 10-99.

B. Galvanized surface repairs and welds, "Zinc-Rich" material.

2.12 LADDER FABRICATION

A. Two inch by 3/8 inch flat bar sides with 3/4 inch round rungs at 12 inches on center, width to be as shown, but not less than 18 inches.

B. Rungs let into side bars, full depth, fully welded and ground smooth.

C. Units to be galvanized after fabrication.

2.13 RAILING SYSTEM FABRICATION

A. All rail systems required for the work of this project as per Part 1 herein shall be fabricated from scheduled materials and to the design configurations shown on the drawings and in strict accordance with the requirements of OSHA Code, Part 1926, Subpart M, governing resistance requirements and strength;

Further, railings shall, unless required otherwise by the applicable building code, be designed to provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails:
   a. Uniform load of 50 lbf/ ft. applied in any direction.
   b. Concentrated load of 200 lbf applied in any direction.
   c. Uniform and concentrated loads need not be assumed to act concurrently.
2. Top Rails of Guards:
   a. Uniform load of 50 lbf/ ft. applied in any direction.
   b. Concentrated load of 200 lbf applied in any direction.
   c. Uniform and concentrated loads need not be assumed to act concurrently.
3. Infill Area of Guards: Horizontal concentrated load of 50 lbf applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Load on infill area need not be assumed to act concurrently with loads on top rails.

B. All rail systems required for the work of this project as per Part 1 herein shall be fabricated from scheduled materials and to the design configurations shown on the drawings.

C. Supporting ballusters shall be fabricated using bar stock, tube, pipe or other elements indicated in metal materials as details require.

D. All rails shall have flush welded fittings except where floor flanges and concealed splices are required. Welds shall be ground smooth for painting.

E. Single rails used for wall handrails shall have neat end fittings and be supported by brackets.

2.14 ANCHORAGE MATERIALS

A. Anchoring cement grout for railings and other such items embedded in construction and requiring same shall be "LokSet QR 10" by Fosroc/Preco. Equal materials shall have a maximum expansion rating of 0.2% and an ultimate compressive strength of 11,000 psi.

B. Mechanical/Chemical Anchors Systems:
   1. Special duty anchor for hollow masonry construction shall be Hilti "HIT C-20" or approved equal in rod and tube sizes required for conditions encountered and/or as dimensioned on the drawings.
   2. Anchor systems for structural attachment to concrete shall be Hilti "HSL Metric Heavy-Duty Expansion Anchor" system or approved equal in sizes required for conditions encountered and/or as dimensioned on the drawings.

2.15 SERVICE STAIR AND RAMP FABRICATION

A. Fabrication and erection of stair work shall conform to the best practice of the trade for stair construction work.

B. Stairs shall be constructed to support the dead load and in addition a live load of 100 lbs. per square foot with legal factor of safety and shall meet all requirements of the laws and the approval of the authorities having jurisdiction.

C. Stairs shall be constructed of structural steel channels for stringers, checker plate treads for steps, platforms and ramps and pipe railing conforming to specifications elsewhere in this section.

D. Treads, platforms and ramps shall be fastened to channel stringers by means of welded angle seats on stringers and bolted or screwed fastening of treads and platforms.

E. Systems shall be supported by either tubular or angular columns at spacing required to comply with loading criteria and welded to base plates which will be fastened to the existing/repaired floor surfaces.

F. Installation shall be rigid, substantial construction throughout, plumb and true to exact lines and levels, positioned in correct locations and in proper relationship to adjoining work. Joints shall be closely fitted at the factory. Rivets, bolts, etc., wherever possible shall be concealed or dressed smooth. Exposed fastenings shall be countersunk.

G. Any additional materials not specifically indicated on the drawings that may be required to make the stair work complete and finished in all details shall be provided.

2.16 MISCELLANEOUS PLATES AND SHAPES

A. Furnish items that do not form a part of the structural steel framework, such as lintels, sill angles, miscellaneous mountings and frames, etc.

B. Provide lintels fabricated from structural steel shapes over openings in masonry walls and partitions as indicated and as required to support wall loads over openings. Provide with connections and fasteners or welds. Construct to have at least 6 inches bearing on masonry at each end.

C. Provide angles and plates, ASTM A 36/A 36M, for embedment as indicated. Galvanize embedded items exposed to the elements according to ASTM A 123/A 123M.

2.17 PIPE BOLLARDS

A. Fabricate pipe bollards from 6-inch black steel pipe, Schedule 80, unless otherwise indicated. Cap bollards with 1/4 inch (6.4 mm) minimum thickness steel base plate; seat to be a 10 inch square by 5/8 inch plate welded to bollard. Units shall be set with 4 expansion bolts as specified herein over a neoprene pad.

2.18 Balance of materials shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 RAILING SYSTEMS

A. Rail posts, set in concrete, shall be set in drilled in pipe sleeves to a minimum depth of 6 inches and anchored with non metallic expansive cement.

B. Rail systems set on steel stringers shall be fully welded with all welds ground smooth and flush.

C. Single pipe rails used for wall handrails shall have neat end fittings and be supported not over 6 feet apart or 10 inches from ends of wall rail by brackets secured to supporting strata by not less than three 1/4 inch expansion bolts unless otherwise detailed or required by industry practice.

D. Anchorage shall be as shown and/or required to insure total conformance with code requirements.

3.03 ACCESS LADDERS

A. Anchor top and bottom and at intermediate locations in accordance with OSHA requirements unless drawings indicate more frequent supports. **Minimum spacing of anchorage - 24 inch centers, each rail.**

B. Provide safety cages as conditions or regulations dictate.

3.04 PIPE SLEEVES

A. Sleeves through and in masonry or concrete for passage of any and all piping and setting of any and all required set and/or built-in items shall be standard weight, wrought iron, mild steel or cast iron, sized to allow 1/4 inch between sleeve and pipe.

3.05 LOUVERS

A. Installation shall be in accordance with drawing details and in strict conformance with the manufacturers instructions.

3.06 SADDLES

A. Saddles shall be set perfectly in full bed of Type VI caulking compound as specified in Section 07 90 00, secured with not less than three flathead countersunk screws driven into lead expansion shields.

B. Saddles shall extend across the full width of the door openings in a single piece, neatly fitted to jamb and properly fitted and cut for hardware. Provide cover plates for hardware.

3.07 EQUIPMENT PLATFORMS AND STEPS/CATWALKS

A. Stairs shall be constructed of steel channel stringers with angle seats and grating treads. Rails to be of standard pipe and welded to strings.

B. Platforms shall be constructed of steel framing members as detailed with surround rails as above.

C. Furnish all channels and hangers required for setting in concrete slab before same is poured.

D. Materials for use shall be as specified herein for gratings. ladders, steps and supporting frames.

3.08 MISCELLANEOUS

A. Steel lintels shall be the full thickness of the masonry and bear at least 6 inches on masonry at each end to support all openings as defined in Part 1 of this Section.

B. Provide at the proper time all the various miscellaneous metal supports and framing not provided under other sections and required to complete the work.

C. All items of miscellaneous metal such as access doors, manhole covers, . plate frames and covers, and the like not otherwise specified, but shown on the drawings shall be part of this contract.

D. Provide inserts of size and type as required as detailed and/or necessary for support of work of this project.

E. Relieving angles (not attached to structural steel or light metal framing as specified elsewhere), hangers, channel bucks, channel frames, support frames and other items of miscellaneous iron shown on the drawings but not specifically covered in the work above shall be considered to be part of work of this Section and shall be done in accordance with best industry practices.

3.09 FINISHING

A. Clean and repair any damage to paint after erection.

B. At galvanized surfaces, apply orange zinc repair paint in compliance with ASTM A 780. Galvanizing paint shall have 95% zinc by weight. Thickness shall not be lesser than required by ASTM A 123 or A 153 as applicable.

C. Touchup of galvanized surfaces with aerosol spray, silver paint, brite paint, etc. is unacceptable.

3.10 PROTECTION

A. Protect existing construction, adjacent work and finished work from damage.

B. Provide drop cloths or other suitable protective coverings in all areas of the work.

C. Damage caused by the handling, storing, mixing or application of materials or the failure to provide adequate protection shall be repaired or replaced at no additional cost to the City of New York.

3.11 ACCEPTANCE AND PATCHING

A. On completion of work, all equipment and rubbish resulting from the work of this section shall be removed from the premises.

B. Leave work clean, whole, and sound ready for additional finish or sealing as specified and/or as shown on the drawings.

3.12 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 05 74 11

CAST IRON RESTORATION

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all cast iron restoration or replacement work at deteriorated window surrounds, excluding courtyard which will be replaced by stucco applications.

The following is extracted from the report on the probes at the site and as defined on the drawings showing the window numbers and locations.

PART #	DESCRIPTION
1	Spandrel Panel Cap
2	Spandrel Panel
3	Spandrel Panel Base
4	Right Side Column, upper section
5	Left side column, upper section
6	Center column, upper section
7	Right side column, lower section
8	Left side column, lower section
9	Center column, lower section
10	Header above lower window

CASTING REPLACEMENT SCHEDULE
(The following units will require replacement of existing castings with new. Refer to plan drawing for window designation. See above for casting designations.)

WINDOW #	PART #
1-1/2	#10
2-1/2	#10(X2), #9, #3(X2), #6
3-1/2	#3(X2), #10(X2)
4-1/2	#3(X2), #10(X2)
5-1/2	#3(X2), #10(X2)
6-1/2	#3(X2), #10(X2), #9
7-1/2	#3(X2), #10(X2), #9, #1
8-1/2	#3(X2), #10(X2)
9-1/2	#3(X2), #10(X2), #9, #1
10-1/2	#3(X2), #10(X2), #9
11-1/2	#3, #10
12-1/2	#10
13-1/2	#1, #3, #10

14-1/2	#3, #10
15-1/2	#3, #10
16-1/2	#10
17-1/2	#10(X3), #3(X3)
18-2	(GARAGE DOOR)
19-1/2	#10(X3), #3(X3)
21-1/2	#10
22-1/2	#10
23-1/2	#10
24-1/2	#10
25-1/2	#10
26-1/2	#3(X2), #10(X2)
27-1/2	#3(X2), #10(X2)
28-1/2	#3(X2), #10(X2), #9
29-1/2	#3(X2), #10(X2)
30-1/2	#3(X2), #10(X2)
31-1/2	#3(X2), #10(X2)
32-1/2	#3(X2), #10(X2)
33-1/2	#3(X2), #10(X2), #9
34-1/2	#3, #10
35-1/2	#3, #10
36-1/2	#3, #10
37-1/2	#3, #10
38-1/2	#3(X2), #10(X2)
40-1/2	#3(X2), #10(X2)
41-2	----
42-1/2	#3, #10
43-1/2	#3, #10
44-1/2	#3, #10
45-1/2	#3, #10
46-1/2	#3, #10
47-1/2	#3, #10

The sequence of restoration should be as follows:

1.	Remove all #1, #2, and #3 castings.
2.	Demolish concrete and brick between the upper and lower window frames to the extent required. Care shall be taken in the removal; provide required shoring of the existing windows and lintels. Cast new spandrel cap sections as required and brake form a heavy gauge sill section to engage existing windows and to overlap the new spandrel cap. Material shall be 2d stainless steel with isolation tape separating stainless steel from cast iron. The only concrete that needs to be demolished is what is behind the spandrel cap (#1), spandrel panel (#2), and the spandrel base (#3). This must be done in order to facilitate the removal of the columns

3.	Removing remaining castings.
4.	Blast, repair, e-coat and repaint reusable castings
5.	Recast unusable parts, e-coat and paint.
6.	Re-install new stainless steel anchor points.
7.	Install stainless steel column anchor plates to existing wood window frames using lag bolts.
8.	Install columns to new anchor plates
9.	Install all refurbished and new spandrel panels, caps and bases.
10.	Caulk all joints between castings and masonry.

Based upon the above and the results of the probe and visual observations, the following should be done:

1. Removal of all elements that exist between the columns including all existing armature iron and loose masonry/concrete as well.
2. Salvage all spandrel panels (#2) to restoration facility - for the purpose of the Bid, allow for 15% full replacement and 10% repair/rebuilding along with full restoration of all existing elements.
3. Provide new castings as required for columns, headers, sills, etc. as noted above in the replacement listing.
4. Provide new stainless steel anchor points and plates for all elements along with replacement "tabs" as required.
5. Protect finished work and work in progress with adequate measures.
6. Perform balance of cast iron restorative and new work necessary and required to complete the project.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 02 41 00 - Demolition
B. 04 01 00 - Masonry Restoration and Cleaning
C. 05 50 00 - Metal Fabrications - Miscellaneous/Ornamental Metals
D. 06 00 00 - Carpentry
E. 07 90 00 - Caulking and Sealing/Joint Sealants
F. 09 90 00 - Painting

1.04 QUALITY ASSURANCE

A. Materials and work shall conform to the latest edition of reference specifications listed below, specified herein and to all applicable code and requirements of local authorities having jurisdiction, whichever is more stringent.
   1. Applicable provisions of the Architectural Sheet Metal Manual (SMACNA).
   2. Welding:
   3. The Contractor shall have the work of this section performed by vendors and mechanics experienced and skilled in its implementation or by a "Specialist", "Specialty Contractor" or "Specialty Subcontractor" under contractual agreement with the Contractor. These terms shall mean an individual

or firm of established reputation, or, if newly organized, whose personnel have previously established a reputation in the same field, which is regularly engaged in, and which maintains a regular force of workmen skilled in either manufacturing or fabricating items required by the Contract, installing items required by the Contract, or otherwise performing work required by the Contract.

Where the Contract Specifications require installation by a 'Specialist', that term shall also be deemed to mean either the manufacturer of the item, an individual or firm licensed by the manufacturer, an individual or firm who will perform such work under the manufacturer's direct supervision.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Documentation: All parts to be photographically documented prior to and after removal, and cataloged with details as to their condition. Determinations will then be made as to the restoration method (repair or replace).
B. Key Plan: Submit key plan of project site and building noted with location of each photograph. Include all label information with all photographs.
C. Submit complete shop drawings for each new replacement element.. Include plan view, front and side elevations, details of all components, and relationships to existing construction.
D. Submit samples of new castings to the Commissioner for approval. Samples will be returned to the Contractor after acceptance by the Commissioner for installation in the work.
E. Submit product literature for specified primer paint and, provide all sample panels and approvals from manufacturer as are required in Section 09 90 00.

F. Certification of Specification Compliance.
G. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 JOB CONDITIONS
A. Provide all required protective sheeting necessary to protect adjacent masonry and other existing parts of the building from damage during dry grit blasting operations. Any damage to adjacent materials shall be repaired or replaced to original condition at no additional expense to the City of New York.

1.07 SUSTAINABILITY
A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 MATERIALS
A. Ductile Iron Castings: ASTM A536, and shall be uniform in quality, free from blow holes, porosity, shrinkage defects, swells, cracks, or other defects. Surfaces shall be smooth and true to pattern..
B. Paint System:
1. Primer : Tnemec Series 161 Zinc Rich Epoxy Primer
2. Intermediate: Tnemec Series 73 Endura-Shield
3. Topcoat: Tnemec 1070 Series Topcoat; Matte
C. Patching Compound: Steel filled two part epoxy metal filler, putty grade such as Devcon "Plastic Steel A", Tnemec 63-1500 Filler and Surfacer, or equal, as approved by the Commissioner.
D. Fasteners: Stainless steel fasteners shall be used in all exposed locations with appropriate head designation for the application.
E. Anchor Bolts: Types and sizes required for each application, fabricated of galvanized carbon steel.
F. Mounting Tabs: New mounting tabs should be fabricated from stainless steel. See detail for typical mounting method to masonry

2.02 NEW CASTINGS

A. Make castings in as large sections and as thin as practicable, with jointing made where least conspicuous. Jointing of plain surfaces and of moulding is, except with Commissioner's approval, prohibited.

B. Fabrication:
Cutting: Cut metal by sawing, shearing, or blanking. Flame cutting will be permitted only if cut edges are ground back to clean, smooth edges. Make cuts accurate, clean, sharp, square, and free of burrs.

1. Holes: Drill or cleanly punch holes (do not burn), so that holes will be accurate, clean, neat, and sharp.
2. Connections: Make connections with tight joints, and within tolerance specified. Expansion joints will be required to maintain a specified tolerance.
3. Welding: Welding shall be in accordance with the recommendations of the American Welding Society and shall be done with electrodes and/or methods recommended by the manufacturers of the metals being welded. Welds shall be continuous, except where spot welding is shown and permitted. Welds exposed to view shall be ground flush and dressed smooth with and to match finish of adjoining surfaces. All welds on or behind surfaces which will be exposed to view shall be done so that finished surface will be free of imperfections such as pits, runs, splatter, cracks, warping, dimpling, and other forms of distortion. Remove weld splatter and weld oxides from all welded surfaces.

C. SMAW weld process will be used for Cast Iron Welding.
1. JW Harris NIC-L-Weld 59 Electrodes are to be used when joining cast iron to steel.
2. JW Harris NIC-L-Weld 99 Electrodes are to be used when joining cast iron to cast iron.

D. Exposed Work: All exposed surfaces should be clean and free of blemish or distortion. Ornamental metal work exposed to view shall be straight and true to line or curve, and aligned as sharp as practicable. Joints shall be carefully matched to produce continuity of line and design. Provide protection of all exposed surfaces of architectural metal work, so as to prevent damage, abrasion, staining, etc., to these surfaces from time of shipment from factory to acceptance of work on jobsite.

E. Approved Manufacturer:
1. Manufacturer for the work of this Section shall be a firm of sufficient size, with minimum 5 years as per approved special experience in the structural detailing, mould making, and casting of ornamental iron work, equal to Allen Architectural Metals, Robinson Iron Corporation or EJ Industries.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION

A. Installation shall be completed square, plumb, straight, true to line or radius, accurately fitted and located. It is the responsibility of the Contractor to assure that shop fabricated architectural items will properly fit in the field, or be prepared to make mentioned items fit in the field. Do all necessary drilling, tapping, cutting, or other preparations of surrounding construction in the field accurately.

3.03 ATTACHMENTS

A. Masonry: Mount stainless attachment tabs to masonry wall using Hilti HSA-R stainless expansion anchors, size of anchor to be determined by load.

B. Wood: Mount stainless attachment tabs to wood using galvanized or stainless steel lag bolts, size of the lag bolt will be determined by the load.

3.04 CAST IRON REPAIR

A. Repair of cracked or chipped units:
   1. Preheat area of crack carefully to prepare it for welding.
   2. Gouge out crack with air arc gouging tool to sound metal.
   3. Without attempting to close cracks or splits, fill (fuse) with weld metal using nickel iron electrodes or braze using recommended bronze rods.
   4. Grind and file down welds to match adjacent contours and surfaces.

B. Repair of small holes up to 1 inch diameter and joint between horizontal and vertical elements.
   1. Fill all holes, depressions, cracks and joints indicated with epoxy metal filler to conform with surrounding contours.
   2. Closely follow the epoxy filler manufacturer's recommendations for surface preparation, environmental conditions, curing, and finishing.
   3. After required setup time, sand surface of filler with #220 grit paper.

3.05 FIELD FINISHING

A. Materials cut in the field must be refinished with the same paint system used for shop application.

B. Finishes damaged during construction should be refinished to show no evidence of damage or correction of damage.

C. Protect castings from damage during shipping and handling.

3.06 CLEANING

A. All metal remaining exposed shall be free from any stains or

blemishes, prefinished material shall be touched up as applicable, and all surfaces shall be cleaned of all foreign substances after work is complete.

B. All surfaces shall be left clean and satisfactory to Commissioner.

C. Exposed surfaces of the building or components thereof, whether provided under this trade section or not, and which have been soiled or damaged by the work of this section shall be cleaned and repaired at no cost to the City of New York.

3.07 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 06 00 00

ROUGH AND FINISH CARPENTRY

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all carpentry work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

NOTE: Material which is buried in construction such as roof blocking, window blocking and the like shall be **borate preservative treated only**; blocking in connection with doors and door frames, interior framing for partitions and furring for wall treatments, support/blocking for casework, etc. shall be fire treated.

1. Provide all wood blocking, battens, nailers, grounds, furring and the like required to secure the work of this and all other sections. Further, attention is directed to requirement for concealed blockings to be provided at all hardware locations (including door stops), toilet room accessories, fixtures and like locations to provide for secure attachment. Coordinate blocking requirements with that specified in Section 09 29 00.
2. Provide temporary partitions, dust and noise control enclosures, temporary doors and bucks, temporary exterior opening enclosures; guard rails at openings and the like; coordinate with Sections 02 41 00 and the DDC General Conditions.
3. Provide borate treated wood roof blocking as required. Coordinate with Sections 07 53 00 and 07 61 10 for extent of work, Section 05 50 00 for galvanized anchor bolts and Section 04 20 00 for installation of said bolts. Blocking, nailers, and plywood shall be fastened to resist a force of 175 pounds per linear foot in any direction.
4. Treat the proposed new roof assembly as follows:
   a. Inspect and for the purpose of the Bid, allow for the removal and replacement of 3,400 lineal feet existing sleepers as well as 20 pull tests to determine capacity of existing concrete deck. Fasteners for new sleepers shall be as specified in Article 2.04 herein.
   b. Provide a horizontal grid of 4 x 4's (or double 2 x 4's) secured to and through the existing sleepers so as to engage the existing concrete slab (or plank) by 1-1/2 inches. Cross furring shall be spaced at 16 inch

centers. Fasteners for cross furring to sleepers and, in the event of double 2x4's shall be as specified in Article 2.04 herein.

c. Provide a cap of ¾ inch CDX "t&g" plywood roof sheathing and fasten to sleepers at 12 inch centers in the fields and 8 inch centers at the perimeter with fasteners as specified in Article 2.04 herein.

5. Provide double layer of ¾ inch plywood for new infill of existing stairway at Office 110; coordinate with Section 05 40 00 for support framing.
6. Provide new wood window trim and sills in Map Room as per drawing details.
7. Provide all fasteners, anchorage items and rough hardware required for the work of this Section whether or not specified in detail.
8. Perform all priming, backpainting, shop coating and the like necessary to complete the work of this Section.
9. Provide all other labor, materials, equipment, and accessories and other items necessary to make the work of this Section complete.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above.

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specifications. Correlation of the contract requirements is the responsibility of the Contractor.

B. All materials used for work of this Section shall conform with Voluntary Product Standards and trade Association Units as follows:

1. Northeastern Lumber Manufacturer's Association Inc. (NELMA); Southern Pine Inspection Bureau (SPIB); Western Wood Products Association (WWPA).
2. American Plywood Association (APA); Douglas Fir Plywood Association (DFPA).
3. Architectural Wood Work Institute (AWI)
4. American Society for Testing and Materials (ASTM).
5. American Wood Preservers' Association and Institute (AWPA) (AWPI)
6. Applicable Federal Specifications for fasteners, bolts, nails, screws, etc.
7. Structural standards as set forth by American Forest and Paper Association (AFPA)
8. New York City Building Code.
9. Underwriters' Laboratories, Inc. (UL) - Building Materials Directory, Sections BPVV, BUGV and as applicable to materials specified within this Section.

Reference Standards Specific to Fire Retardant Treatments in addition and/or supplement to those voluntary standards set forth above.

1. ASTM D 3201 - Test Method for Hygroscopic Properties of Fire Retardant Wood.
2. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials - Extended 30 minute test.
3. Military Specifications MIL-L-19140E - Lumber and Plywood, Fire Retardant Treated.

C. Identify each piece of dimensional lumber and plywood with Underwriters Laboratories, Inc. mark certifying surface burning characteristics, interior Type A in accordance with AWPA C-20 (Lumber) AWPA C-27 (Plywood), kiln-dried after treatment (KDAT). Identification mark shall also indicate monitoring by Timber Products Inspection, Inc., in accordance with nominated manufacturers standard governing such work.

D. Quality Mark: All borate preservative treated wood members shall bear a permanent ink stamp indicating the following:
1. Manufacturer's name.
2. Treatment plant name.
3. Quality mark of an AWPA approved independent inspection agency.
4. Symbol "SBX" (sodium borate), preservative retention level, and date of treatment.
5. AWPA treatment standard, wood species, and the words "Above Ground and Continuously Protected From Liquid Water."

E. All materials incorporated in the work of this Section shall comply with the following:
a. Class A, Flame Spread 0-25 interior finish shall be mandatory in corridors; passageways; stairs; exit ways; kitchens; maintenance, repair and custodial areas; trim/paneling systems in places of public assembly.
b. Class C, Flame Spread Less than 200 interior finish is mandatory in all instructional and office spaces.

In any case, regardless of the flame spread classification, no material having a smoke developed rating of 450 or more may be used in any area of work on this project.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may

become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Each type of material and anchorage devices to be used in the work of this section.
B. All other items as deemed necessary by the Commissioner.
C. Certification of specification compliance for materials incorporated in the work including the National Evaluation Report discussing high temperature strength testing, flame spread, corrosion, and hygroscopic properties for fire retardant treatments.
D. This Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.
E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver all materials to the job site clearly labeled as to product, manufacturer, color and/or other pertinent characteristics.
B. Pile lumber to insure proper ventilation and drainage.
C. Store materials a minimum of 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation or ventilation.
D. Protect fire retardant materials against high humidity and moisture during storage and erection. Keep materials dry during delivery and storage.
E. Provide temporary enclosure of doors, windows and other exterior openings when necessary to meet conditions specified; maintained in good repair; and remove when no longer required. Protect door and window frames, trench covers and floor hatches from traffic and protect exterior masonry from mortar drippings.

1.07 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
    1. Water based.
    2. Water-soluble.
    3. Can be cleaned up with water.
    4. Non-flammable.
    5. Biodegradable.
    6. Low or preferably no Volatile Organic Compound (VOC) content.
    7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.

8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. Grade Marking: Grade Mark, trademark and mill identification of the trade association having jurisdiction shall appear on each piece of standard yard dimension lumber (not boards) except that the shipment may instead be accompanied by a Certificate of Inspection identifying Compliance with these Specifications.

This certificate shall be issued by an agency authorized to grade by the manufacturer's association recognized as responsible for grading rules for species involved.

B. Moisture Content: Lumber 2 inches and less in thickness, and boards, shall not exceed 19%.
C. SIZING: Surface lumber 4 sides as per Simplified Practice Recommendations PS16, latest edition.
D. Grounds, blocking, furring and the like - No. 2 and better Douglas Fir, West Coast Hemlock, Southern Yellow Pine, Sitka Spruce or Northern Pine.
E. Lumber for concealed work shall be fire and/or preservative treated and of suitable construction grade species.
F. Lumber for padding and other attachment - Douglas Fir or HemFir, select.
G. Lumber for painted trim shall be Poplar.

2.02 PLYWOOD

A. Combination Floor Sheathing/Underlayment - APA Rated "Sturd-I-Floor", Exposure 1, 3/4 inch, tongue and groove design all edges.
B. Roof Sheathing - 3/4 inch, APA "Rated Sheathing, EXT", provide either tongue and groove edges or ply-clip fasteners.
C. Sidewall sheathing, 5/8 inch APA "Rated Sheathing, EXT".
D. General Purpose, Concealed - APA, EXT B/C in thickness to suit conditions of use and/or as shown on the drawings.
E. General Purpose, Exposed - one side and painted - APA MDO EXT.

2.03 GLUES AND ADHESIVES

NOTE: All adhesives used in the work of this project shall be VOC compliant in accordance with requirements of the applicable codes.

A. Glue - Type II moisture resistant adhesive for interior use and Type I waterproof adhesive for exterior and all fabricated systems used in "wet" areas. No stain lines permitted.
B. Adhesives - Epoxy resin, clear, similar and equal to "Colma-Dur

Gel" as manufactured by Sika Chemical Company and deemed suitable for intended application.

2.04 CARPENTER IRON AND ROUGH HARDWARE

A. All anchorage items shall be sized to meet requirements and conditions at the site. All anchorage items shall be non-corrosive steel. Provide backup plates and other devices as part of the work of this Section.

B. Rough hardware shall be of commercial quality of ample size and type to support live and dead loads and to hold members securely in place and in conformance with National Design Specifications as recommended by NFPA.

Nails, spikes, screws, bolts and similar items shall be of sizes and types to rigidly secure members in place and -as shown on the drawings. Bolts and lag bolts shall comply with ASTM A 307-88a. Lag bolts shall be zinc plated.

1. Minimum fastener size and spacing shall comply with the Recommended Nailing Schedule in the Referenced Building Code, unless noted otherwise on the drawings.
2. Bolts and screws shall penetrate structural substrate at least 1/2 of a wood substrate thickness, at least 3 inches into concrete and masonry substrates and as shown on the drawings.

C. Other fastening devices, either hand or machine driven, may be used if equally suitable and as strong as those shown or specified, and if such performance qualities have been properly determined and if the Commissioner has given written approval of each type, size and use of such devices.

D. Bolts and nuts shall conform to FS #FF-B-571, all clamps, expansion bolts, expansion sets, washers, anchors, steel and iron shall be galvanized and of standard type.

E. Lag screws: FS #FF-B-561; Nails: FS #FF-N-101 or may be drive screw or spiral type of standard make.

F. Steel plates, shapes, etc. shall be of type and grade normally used in Commercial practice.

G. Plywood Sheathing Clips - Extruded aluminum, Alloy 6063-T6 of size to fit project furnished material.

H. Toggle bolts for fastening of wood to hollow wall construction shall be of spring wing type, not less than 3/8 inch diameter; screws shall be not less than 1/4 inch diameter self-drilling type.

I. Wood-to Wood connections - annular ring nails in gauges as detailed and/or required with length to provide a minimum of 1-1/2 inch embedment into the final piece receiving the nail points, except full depth into plywood.

J. Wood to Concrete and/or masonry - 3/8 inch diameter stainless steel wedge anchors WW3836 by ITT Phillips with FS1420 for fastening plywood to said substrate.

K. Attachment devices for new framing to existing construction:

1. Metal to existing wood - 1/4 inch diameter by 2 inch long lag bolts spaced at 10 inches on center.

2. Metal to masonry or concrete - 5/8 inch diameter bolts and expansion sets, minimum 3 inch depth and spaced at maximum 2 foot 6 inch centers.

L. Attachment devices for door frame head to existing construction - 5/8 inch diameter lag bolts long enough to penetrate masonry a minimum of 3 inches and spaced at 12 inch centers.

M. Metal to metal connectors - minimum #6 self tapping sheet metal screws spaced at 8 inches on center.

N. Sleeper fasteners to existing concrete deck - Blue Tapcons

O. Cross furring fasteners to existing or new sleepers - Heavy duty roofing fasteners similar and equal to OMG #14, Corrosion Coated or equal by Simplex or SFS/Intec.

2.05 FIRE TREATMENT

A. Each piece of lumber and plywood shall bear the Underwriters Laboratories (UL) Classification Mark certifying a flamespread rating of 25 or less in the (ASTM E 84) "Tunnel Test", and when the test is extended for 20 additional minutes (30 minutes total), the flame shall not extend more than 10.5 feet from the center line of the burner and there shall be no evidence of significant progressive combustion.

B. Lumber design values and plywood span ratings shall be recognized by issuance of a National Evaluation Report which shall include evaluation of strength testing for roof applications.

C. In addition to UL monitoring for flamespread certification, production and kiln drying after treatment shall be monitored by Timber Products Inspection (TP).

D. Lumber shall be kiln dried after treatment to 19% or less moisture content, and plywood to 15% or less moisture content.

E. Treatment formulation shall contain no halogens, sulfates, chlorides or ammonium phosphate.

F. Treatment shall qualify as non-hygroscopic in accordance with ASTM D 3201.

G. System shall be similar and equal to that as manufactured by Hoover "PYRO-GUARD 3rd Generation Fire Retardant Treatment"; Hickson "Drycon"; Chemical Specialties, Inc. or approved equal and shall be certified as "paintable" or "stainable" in accordance with the requirements of this project.

2.06 BORATE OR SODIUM SILICATE PRESERVATIVE TREATED WOOD PRODUCTS

A. Manufacturer: Osmose, Inc. - Wood Preserving Division OR TimberSIL (SST).

B. Borate Preservative Treatment: Disodium octoborate tetrahydrate (DOT) treatment for insect and decay protective pressure treatment of wood as produced by manufacturer's licensed treatment plants, producing material meeting the following minimum standards:

1. Preservative Treatment Standard: AWPA P5.
2. Structural Lumber Treatment Standard: Comply with AWPA C31.
3. Plywood Treatment Standard: Comply with AWPA C9.
4. Treatment Level: Provide borate preservative treatment retention level recommended by manufacturer to provide the following minimum protection, as indicated on wood product

quality stamp specified in Quality Assurance article: .42 DOT retention (0.28 pcf (4.5 kg/m3) B2O3) minimum retention (required for warranty).

C. Field Applied End Coat: Preservative solution approved by preservative treated wood manufacturer for application:
   1. Osmose, Inc., Tim-bor disodium octaborate tetrahydrate (DOT), 10% solution.
   2. Copper Naphthenate, 2% solution, copper metal basis.

Where it is necessary to frame lumber on the job after treatment, all cut surfaces, bolt holes and machined areas shall be liberally brushed with the same preservative in accordance with AWPA Standard M4.

Where shrinkage is a serious fault or where treated lumber will be in contact with lime or cementitious surfaces, and where water-borne treated lumber is to be painted, excess moisture will be removed.

Lumber 2 inch nominal and less shall be dried to 15-19% moisture content, and material to be painted shall have knots and pitch streaks sealed as with untreated wood.

2.07 MISCELLANEOUS STRUCTURAL LIGHT FRAMING - #2 Southern Pine, Spruce-Pine-Fir group or other suitable commercial softwood species, S4S, kiln-dried and conforming to the following:

A.	Bending ----------	1,200 psi
B.	Tension (Parallel to Grain) --	1,050 psi
C.	Horizontal Shear ----------	70 psi
D.	Compression (Perp. to Grain) -	335 psi
E.	Compression (Par. to Grain) --	1,000 psi
F.	M.O.E. ----------	1,500 mpsi

2.08 LAMINATED VENEER LUMBER

A. Provide manufactured timber consisting of vertical 0.10 inch to 0.125 inch plys laminated together with waterproof adhesive and with all grain oriented parallel to the length of the member, such as Micro-Lam manufactured by Trus Joist Corporation or Gang-Lam manufactured by Louisiana-Pacific Company.
   1. Materials shall comply with a CABO Evaluation Report such as NER-126 (for Micro-Lam).
   2. LVL timber shall be identified by a stamp indicating the product type, CABO NER report number, manufacturer's name, plant number and the independent inspection agency's logo and evaluation report number.
   3. LVL timber shall have a modulus of elasticity, E, of at least 2,000,000 psi and an allowable bending stress, F_b, in tension or compression of at least 2,900 psi.
   4. Provide LVL in lengths suitable to span entire distance shown on plans. Do not butt splice pieces.
   5. Comply with manufacturer's instructions for face nailing or bolting timbers together to form larger beams and for any

blocking or bracing.

2.09 Balance of materials shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 WORKMANSHIP AND CONSTRUCTION, GENERAL

A. All work hereunder shall be executed by mechanics skilled in the trade.

B. Set all work plumb, level, straight and true. Secure to grounds and blocking so as to be rigid throughout. Work which adjoins other finish shall be fitted and scribed in a careful manner so as not to injure any exposed surfaces.

C. Perform all joining and fastening in a manner to insure work remaining permanently in place and to avoid all splitting or opening of joints.

D. Field cutting of fire retardant treated dimensional lumber and plywood. End cuts, drilling holes, and joining cuts are permitted. Do not rip or mill fire retardant treated lumber. Fire retardant treated plywood can be cut in any direction.

3.03 PRIMING AND BACKPAINTING

A. Materials used shall comply with requirements of such materials as specified under Section 09 90 00 , suitable for intended application.

B. Except where stain or natural finish is specified, thoroughly prime all sides and edges of all lumber as soon as delivered to the site.

Where material is called for to be "sealed" with a consolidant type sealer, said material shall be sealed on all faces, edges, natural and cut ends prior to placement in the work.

NOTE: Where fire treated lumber is employed in the work, priming and backpainting of same will not be required.

3.04 MISCELLANEOUS CARPENTRY

A. Contractor shall do all rough framing work in connection with installation of access doors, heating and ventilating grille, panels, roofing and sheet metal work, cabinets and mechanical trades, where required and according to conditions at the building.

B. Do all required cutting, patching and jobbing in advance of finishing trades and work.

C. Furnish and install wood grounds, nailing strips, cant strips,

blocking and similar items wherever necessary or required throughout the buildings for support, proper erection or installation of carpentry and for the support of cabinets, shelf cleats, and all other millwork and building construction work of all other sections.

3.05 ROUGH HARDWARE

A. Install all rough hardware for proper installation of carpentry and millwork.

B. Hardware shall be as per Part 2 of this Section.

3.06 PLYWOOD INSTALLATION

A. Install all plywood in conformance with recommendations of the American Plywood Association.

B. Lay floor plywood, good side up, with face grain perpendicular to framing. Stagger end panel joints with each panel end bearing on support. Allow 1/8 inch spacing at panel ends and 1/4 inch at panel edges unless otherwise recommended by the manufacturer. Floor joists shall be beaded with construction adhesive and plywood shall be secured to joists at 6 inch centers on edges and 10 inch centers on intermediate supports with screw nail fasteners.

NOTE: Contractor shall take every precaution to protect exposed surface. Should the surface become unsuitable to accept the finish flooring it will be the responsibility of this Contractor to add underlayment or to skim the surface in preparation for finish floor surfacing.

C. Roof sheathing shall be laid with face grain perpendicular to framing and nailed at 8 inch centers at edges and 12 inch centers in field.

D. Sidewall sheathing shall be secured to studs with self-drilling screws at 8 inch centers on edges and 12 inch centers in field.

3.07 HARDWARE AND ACCESSORIES - Coordinate with Section 08 71 00

A. Receive, store and be responsible for all hardware and accessories furnished by others. Properly tag, index and file keys in key cabinet at completion of work and so deliver to the Commissioner.

B. Fit all hardware accurately, apply securely and adjust carefully. Leave in working order, free from defects.

C. Center door knobs centered 38 inches above floor and center of door pulls 45 inches above floor unless otherwise indicated on drawings. Leave in working order, free from defects. Mount knobs and pulls as required for barrier free access, if different heights.

D. Contractor shall be responsible for condition and operation of all finished Hardware until issuance of Certificate of Final Acceptance.

3.08 PROTECTION

A. Protect all new and existing construction, adjacent work and

finished work from and damage. PROVIDE DROP CLOTHS OR OTHER SUITABLE PROTECTIVE COVERINGS IN ALL AREAS OF THE WORK.

B. Damage caused by the handling, storing or application of materials or the failure to provide adequate protection shall be repaired or replaced at no additional cost to the City of New York.

3.09 ACCEPTANCE AND PATCHING

A. On completion of work, all equipment and rubbish resulting from the work of this section shall be removed from the premises.

B. Leave work clean, whole, and sound ready for additional finish or sealing as specified and/or as shown on the drawings.

C. Clean all glass, doors, frames, and accessories free of dirt and other foreign materials after completion of installation.

3.10 WASTE MANAGEMENT

A. Separate wood waste in accordance with the Waste Management Plan.

B. Separate the following categories for salvage or reuse on site:
   1. Sheet materials larger than 2 sq. ft.
   2. Solid wood:
      a. Trim longer than 16 inches
      b. Multiple offcuts of any size larger than 12 inches

C. Recycle the following categories:
   1. Clean, unpainted engineered wood products
   2. Clean, unpainted dimensional lumber

D. Separate the following categories for disposal and place in designated areas for hazardous materials:
   1. Treated, stained, painted, or contaminated wood

End of Section

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SECTION 07 22 00

ROOF INSULATION - NAIL BASE TYPE

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all roof insulation work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide, in conjunction with Section 07 61 10, a **"9/16 INCH PLYWOOD NAILING"** board topped foam insulation system in a single thickness to yield an aged "LTTR" factor of 19.1 (3-1/2 inch overall).
2. Coordinate with Section 06 00 00 for "platform" of framing to raise the level of the roof by 4 inches plus the nail base to allow for creation of the required gutter assembly.

NOTES:

Materials proposed which produce higher "R" values in thinner sections are acceptable with the understanding that all necessary adjustments to flashings, curbs, fascias and other elements that may be affected by such changes in depth be accomplished at no additional cost to the City of New York.

Attention is directed to Part 3 herein for protection of board surface during installation; coordinate with companion roofing sections.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 03 30 00 - Cast in Place Concrete
B. 03 41 13 - Precast Concrete Plank
C. 06 00 00 - Carpentry
D. 07 53 00 - Membrane Roofing

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the General Contractor.

B. The "R" VALUES for the insulation materials shall be as determined by "The Standard for Mineral Wool Building Insulation", 1960 Edition, of the NMWIA. "R" values listed are minimum requirements.

C. IDENTIFICATION: All insulation materials shall be properly identified on the package with the manufacturers' name and "R" value, and shall indicate the fiber material.

D. Reference Standards

1. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
2. ASTM D 312 - Standard Specification for Asphalt Used in Roofing.
3. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
4. ASTM E 119 - Standard Test Methods for Fire Tests of Building Constructions and Materials.
5. FM 4450 - Approval Standard - Class 1 Insulated Steel Roof Decks.
6. FM 4470 - Approval Standard - Class 1 Roof Covers.
7. LTTR - Long Term Thermal Resistance, using techniques from CAN/ULC S770 based on ASTM C1303.
8. UL 263 - Fire Tests of Building Construction and Materials.
9. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
10. UL 1256 - Fire Test of Roof Deck Constructions.
11. ASTM E 2114-01 - Standard Terminology for Sustainability Relative to the Performance of Buildings.
12. ASTM 2129 -01 - Standard Practice for Data Collection for Sustainability Assessment of Building Product.

E. DEFINITIONS

1. HCFC FREE "Green" Polyiso Roof Board Insulation is defined as environmentally friendly, with Zero Global Warming, Zero Ozone Depletion (ODP) as in compliance with the US EPA requirements of January 1, 2003 requirement to eliminate production of HCFC 141b.
2. LTTR (Long Term Thermal Resistance) is defined as using techniques from ASTM C1303, CAN/ULC S770 predicting a foam's R-Value that has been shown to be equivalent to the average performance of a permeably faced foam insulation product over 15 years. In Canada this method is used as the Design R-Value. This applies to ALL foam insulation products with blowing agents other than air, such as Polyiso, "Green" Polyiso, extruded polystyrene and polyurethane. The new method is based on consensus standards in the US and Canada. PIMA has reported this method as providing a better understanding of the thermal performance of foam.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Product Data:
   1. Manufacturer's HCFC FREE "Green" Polyiso specifications.
   2. Installation instructions for HCFC FREE "Green" Polyiso insulation board and fasteners.
   3. Product Data as per ASTM 2129 - 01 Standard for Data Collection for Sustainability Assessment of Building Products.

B. Samples:
   1. 6 by 6 inch (152 by 152 mm) samples of each board type required.
   2. each fastener type required.

C. Shop Drawings: Roof plan showing layout of boards, and fastening patterns, and ventilation and roof edge details.

D. Certificates: System Manufacturer's or insulation manufacturer's certification that HCFC FREE "Green" Polyiso materials meet Zero ODP (Ozone Depletion Potential) and Zero GWP (Global Warming Potential) specification requirements.

E. Thermal Warranty: Submit sample warranty indicating conditions and limitations.

F. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the job site in unopened factory sealed packaging, clearly labeled as to product, manufacturer, values and other pertinent characteristics and stored under conditions as recommended by the manufacturer.

1.07 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.
   2. Water-soluble.
   3. Can be cleaned up with water.
   4. Non-flammable.
   5. Biodegradable.
   6. Low or preferably no Volatile Organic Compound (VOC) content.
   7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
   8. Manufactured without compounds that contribute to smog in the lower atmosphere.

9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. Acceptable Manufacturers:
1. Nail Base: Atlas Roofing Corporation; Hunter; Cornell or approved equal.
2. Vapor retarder: Fortifiber "VaporStop 398" Roof Deck Vapor Retarder

or approved equal manufacturers who can demonstrate technical compliance with the nominated systems.

B. Provide all HCFC FREE "Green" Polyiso roof board insulation from a single manufacturer.

2.02 MATERIALS - NAIL BASE SYSTEM

A. HCFC FREE "Green" Polyiso Roof Board Insulation: Provide products that comply with the following:
1. ASTM standards specified.
2. Factory Mutual (FM) approvals specified.
3. Underwriters Laboratories Inc. (UL) classifications specified.
4. Metro-Dade County, Florida Product Control.
5. California State Insulation Quality Standards and Title 25 Foam Flammability Criteria.
6. BOCA National Building Code Sections on Foam Insulation.
7. ICBO Uniform Building Code Sections on Foam Insulation.
8. SBCCI Standard Building Code Sections on Foam Insulation.
9. Canadian Compliance: CAN/ULC, CGSB, and CCMC.
10. Montreal Protocol requirements to eliminate HCFC 141b from production by January 1, 2003.

B. **ACFoam Nail Base**: Closed-cell HCFC FREE "Green" polyisocyanurate foam core board manufactured using ACUltra Hydrocarbon blowing agent and bonded to **9/16 inch thick APA rated CDX Plywood** with a fiber-reinforced felt facer on the bottom; FM Standard 4450/4470 approval 1-90; compressive strength - 20 psi.

C. **LTTR - Insulation "R" Value: 19.1**. Long-term thermal resistance values of the foam were determined in accordance with CAN/ULC-S770. All test samples were third-party selected and tested by an accredited materials testing laboratory.

D. Related Materials:
1. Fasteners: Factory Mutual approved.
2. Base Ply: As recommended by membrane manufacturer.
3. Fasteners: Atlas Nail Base Fasteners.

2.03 FASTENERS - Nail Base fasteners furnished by manufacturer of the system to insure conformance to guarantee/warranty requirements contained herein and installed in a pattern to achieve engineered Factory Mutual rating

for Class 1 construction.

2.04 UNDERLAYMENT: See Section 07 53 00.

2.05 VAPOR RETARDER

A. Product shall be manufactured from two layers of high-strength kraft, black polyethylene laminate and bi-directional glass reinforcing fibers. Edges reinforced with fiberglass scrim provide additional strength.

B. Material shall meet Federal Specification UU-B-790a, Type 1, Grade "A", Style 4.

2.06 Other materials shall be as specified in Part 3 of this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION

A. Nailing base board insulation shall be installed with long dimension parallel to eaves with end joints staggered a minimum of 12 inches. Secure deck at 8 inch centers on short (width) dimension and 24 inch centers on long edges.

B. Install no more insulation than can be covered in a single day with respective roofing system or by "self-adhering" membrane or other type weather protective cover. Extent of cover shall be as defined in reference section.

3.03 CLEANING

A. Clean up, remove and dispose of excess materials, litter and debris; leave all work areas in a clean condition.

3.04 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

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SECTION 07 53 00

MEMBRANE ROOFING (EPDM)

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of membrane roofing, insulation and flashing work for this Project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Remove existing ballasted "epdm" roof and flashings and legally dispose of off the project site.
2. Properly prepare existing concrete deck to receive new assembly, coordinate with Section 03 30 00 for concrete patching, for the purpose of the Bid, allow 10% of gross area, less skylight.
3. Provide combination of tapered and flat composite isocyanurate insulation over entire roof area in such a drainage pattern so as to yield a minimum of 1/4 inch per foot pitch or as may be required to insure a completely free draining roof; double drains (overflow capacity). Contractor shall submit drawings showing pitch configurations prior to the ordering of any insulation material. Secure insulation to prepared substrate with either mechanical fasteners of such depth to penetrate overall assembly and deck by a minimum of 3/4 inch or with a one step foamable adhesive. NOTE: Adhesive installations are temperature sensitive and must be applied in a controlled environment. In the event that temperatures are below 40 degreesF (and falling), securement shall be made with mechanical fasteners only and further, when applied to cementitious and/or concrete decks mechanical fasteners shall have a minimum 2 inch embedment. Securement shall comply with wind uplift requirements set forth below. Required Overall Resistance - "LTTR" (insulation only) shall be in compliance with applicable energy code, but in no case less than 20. Resistance factor shall be based upon the "average thickness".
4. Apply over all insulation as separate overlay of protection board mechanically fastened through insulation to deck or applied in adhesive fashion to said insulation..
5. Provide fully adhered 60 mil, reinforced fire rated epdm membrane roof along with companion flashings for the main courtyard roof as well the new elevator bulkhead roof. Further, provide combination of mechanically attached and fully membrane systems on vertical surfaces as extensions of

base flashings at locations shown. All such material shall be a minimum 60 mil nonreinforced EPDM material.

6. Coordinate with Section 07 61 10 for gutter, gutter lining and parapet flashing and cap.
7. Coordinate with Section 06 00 00 for wood blocking, nailers, plywood and the like as required to provide for positive attachment of membrane systems and to provide smooth transitions from horizontals to verticals. NOTE: Fiber accessories are not permitted in any work of this contract.
8. Coordinate with Division 22 for roof drain systems, provide flashings. Drains shall be set "on the deck" in flat sumps provided under Section 05 30 00.
9. Install roof equipment curbs furnished under Division 23 (HVAC) for fans.
10. Construct new "pitch pockets", vent flashings, hoods, penetration sleeves, and the like as may be required by the conditions encountered. "Pitch" shall mean "liquid rubber".
11. Provide walkway system from exit door and/or access ladders to and around all items of equipment, fans and the like that require maintenance. Routing shall be in straight line with 90 degree turns. Walkway Type - individual pads set with spacers or roll type.
12. Construct gutter system at base of sloped metal roofs as shown on drawing A-850 consisting of:
    a. High density foam insulation to form crickets to insure positive slope to drains.
    b. 60 mil unreinforced membrane liner carried up slope (under metal roofing) 6 feet and up and over parapet wall.
    c. Terminate at both ends with a stainless steel flat termination bar. All laps within the assembly from termination to termination shall be a minimum 6 inches and battened with a cover strip with sealant at both edges.
13. Provide perimeter wire and isolating wire for grounds in membrane field, attach electronic testing system that delivers a pulsating low voltage potential difference between the roof membrane surface and the structural deck and complete testing with receiver to locate breaches.
14. Existing drains shall be removed and new drains placed. Existing leaders shall be "routed" and cleaned.
15. Establish, as part of the basic project requirements, a semi-annual inspection, and yearly maintenance program for the subject roofing systems to be carried out over the course of the entire guarantee/warranty period.
16. Perform balance of roofing and flashings as may be required to insure watertightness and overall conformance to guarantee/warranty requirements contained herein.

NOTE: ROOF INSPECTIONS BY MANUFACTURER

Arrange for the roofing Manufacturer, or his authorized representative, to make a minimum of five inspections in accordance with the following schedule and submit a written report of each inspection to the Commissioner within one week following each inspection.

1. First inspection during the first two days of new roof installation.
2. Second inspection when roofing is approximately 1/2 complete.
3. Third inspection when all roofing and flashings are installed.
4. Final inspection at the completion of all work.

Provide 48 hours advance written notice to the Commissioner, so he may have a representative attend the inspections.

Failure to comply with these requirements will result in withholding of payment requisitions for roofing and flashing operations.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 07 60 00 - Flashing and Sheet Metal

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.

B. The work of this section shall be performed by a Specialty Contractor meeting the following minimum requirements as set forth in the "Special Experience Requirements" of the City of New York:

"The contractor or subcontractor performing the work of this section must, within 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. Such prior projects must have involved facilities determined by the City to be of landmark quality and/or historical significance. The contractor or subcontractor performing the work of this section must be licensed or approved by the manufacturer of the roofing system."

1. Contractor shall:
   a. directly employ the personnel performing the work of this section.
   b. be acceptable to or licensed by the Manufacturer of the primary roofing products.
   c. maintain a full time supervisor-foreman on the roof.

C. Application of roofing systems shall be coordinated with installation of roof insulation, metal and fabric flashings and all other similar items to provide a watertight installation.

D. Follow commercial practice and manufacturers' and suppliers' instructions relating to handling and use of materials except as modified herein. The material properties specified herein shall be the minimum requirements for project work.

E. Flashing rings at roof drains, cap, counter and collar flashings

for the mechanical and electrical trades shall be done by these respective contractors.

F. Leak Detection Testing
   1. Testing agency shall have a minimum of 3 years experience of testing.
   2. Testing agency shall examine all surfaces to be tested. Testing agency shall notify roofing/waterproofing contractor contact of any and all conditions which in his opinion, will affect satisfactory execution of the testing.
   3. Tested areas should be protected from roof traffic as soon as possible after test is completed.
   4. Testing agency shall provide a written report with a digital roof plan, plotted breaches on roof plan, photographs of each breach, a table of breach locations and verification of breach repair.

G. Contractor shall coordinate the work of all trades so as to insure a weathertight and complete installation.

H. A preconstruction roofing meeting is required and the attendance of the following is mandatory:
   1. Architect
   2. Commissioner
   3. General Contractor & Project Superintendent
   4. Roofing Subcontractor & Project Superintendent
   5. Sheet Metal Fabricator & Project Superintendent
   6. Membrane Manufacturer, Local Representative & Designated Roofing Inspector for the Guarantor.
   7. Tapered insulation manufacturer.

   and such other parties so designated by the Commissioner.

   The Commissioner will record items discussed at the conference and furnish a copy to each party attending. Items to be discussed, include the following:

   8. How the application of the new roofing system will be coordinated with the removal of the old roof; the inspection of and repairs to the deck; and the installation of gypsum board, wood blocking, roof insulation, crickets, roof drains, metal and membrane flashings and other items to provide a watertight installation.
   9. Commercial practice and the Manufacturer's instructions for handling and use of materials.
   10. The expected condition of the roof deck, drains, curbs, penetrations and other preparatory work needed and/or performed by other trades.
   11. Submittals, both completed and yet to be completed.
   12. The construction schedule, material availability, crew size and work hours, equipment and facilities needed to make progress and avoid delays.
   13. A schedule for Manufacturer and Commissioner inspections.
   14. Expected weather conditions, and procedures for coping with unfavorable weather.

I. The Contractor is advised that a project team will be designated for this work and will consist of qualified managers and superintendents who will be subject to approval by the Commissioner and City of New York. Experience data shall be submitted and the nominated roofing manufacturer shall have approved said team prior to submittal of names;

Further, the Contractor is advised that no changes in supervisory personnel will be permitted without justifiable cause and/or as approved by the Commissioner and Roofing Manufacturer.

J. The entire assembly of roofing membranes, insulation, cap and base boards and the like shall be composed of materials classified as Class A by Underwriters Laboratories, Inc. as per UL790 or equivalent within rated system for roof/ceiling designs as required by the project; further, UL 1897 Standard for Safety for Uplift Tests for Roof Covering Systems.

K. Definitions

1. HCFC FREE "Green" Polyiso Roof Board Insulation is defined as environmentally friendly, with Zero Global Warming, Zero Ozone Depletion (ODP) as in compliance with the US EPA requirements of January 1, 2003 requirement to eliminate production of HCFC 141b.
2. LTTR (Long Term Thermal Resistance) is defined as using techniques from ASTM C 1303, CAN/ULC S770 predicting a foam's R-Value that has been shown to be equivalent to the average performance of a permeably faced foam insulation product over 15 years. In Canada this method is used as the Design R-Value. This applies to ALL foam insulation products with blowing agents other than air, such as Polyiso, "Green" Polyiso, extruded polystyrene and polyurethane. The new method is based on consensus standards in the US and Canada. PIMA has reported this method as providing a better understanding of the thermal performance of foam.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Certificates
   1. Submit evidence of roof applicator's experience and copy of manufacturers certification letter of approved applicator.
   2. Submit prior to fabrication, delivery or installation evidence that -
      a. Materials and components furnished shall conform with requirements or the Project Specifications.
      b. Materials furnished shall be compatible for the deck indicated, each one to the other and to adjacent related work.

B. Samples and Manufacturer's Literature - Submit prior to fabrication, delivery or installation:

   NOTE: Literature acceptable in lieu of Samples.

   1. Samples
      a. Membrane: 12 inches square.
      b. Insulation: Descriptive data and drawings
      c. Fastener systems (mechanical or adhesive)
      d. Pourable or Trowel type liquids or coatings: 1 pt. per type
      e. Base Flashing, Pressure Sensitive Strips, "Russ" Strips, etc: 12 inch sections by typical width.
      f. Walkway Pads/Pavers/Supports: 1 unit or descriptive data.
      g. Caulking and sealant material: descriptive data (see Section 07 90 00).
      h. Samples of preformed materials: 1 each.
   2. Latest edition of acceptable manufacturer's roofing (and base flashing) specifications selected.
   3. List of materials proposed for use.

C. Shop drawings showing:
   1. Any procedure, technique, or material that deviates in any fashion from that shown of specified in the Contract Documents.
   2. Detail drawings showing all flashing conditions, joint conditions and the like.
   3. Complete layout of the tapered insulation system and compliance with the drainage pattern required. Only the manufacturer's tapered insulation shop drawings will be acceptable.

      Shop drawings shall outline roof and shall include locations of drains, scuppers, gutters, the profile of tapered insulation components, indications of minimum and maximum insulation thicknesses and the average "R" value for the

completed insulation system or facer type.

NOTE: Drawings shall indicate "flat sump" requirement for roof drains. The mandate for a minimum 3 foot clear area with "base board" only around drains shall be clearly indicated.

D. Certification of specification compliance on all work including an additional certification from the manufacturer of the tapered insulation certifying positive drainage.

Further, System Manufacturer's or insulation manufacturer's certification that HCFC FREE "Green" Polyiso materials meet Zero ODP (Ozone Depletion Potential) and Zero GWP (Global Warming Potential) specification requirements

IT IS A MANDATE OF THESE DOCUMENTS THAT THE FINISHED ROOF BE DEVOID OF ANY STANDING WATER WITHIN 48 HOURS OF RAINFALL AS ESTABLISHED WITHIN THE NRCA RECOMMENDED GUIDELINES.

E. Material Safety Data Sheet (MSDS) must be submitted for each product.

F. Permanent Leak Detection Submittals
   1. Test procedure description
   2. Closeout Submittals: Testing agency to submit report of findings.

G. After completion and acceptance of the project the manufacturer shall issue to the City of New York a certificate acknowledging that the installation was done in accordance with the requirements outlined herein.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers and rolls with labels intact and legible.

B. Deliver materials requiring fire resistance classification to the job with labels attached and packages as required by labeling service.

C. Deliver materials in sufficient quantity to allow continuity of work.

D. Handle rolled goods so as to prevent damage to edge or ends.

E. Select and operate material handling equipment so as not to damage existing construction or applied roofing.

F. Store materials on clean raised platforms with weather protective covering when stored outdoors.

G. Store rolled goods on flat.

H. Provide continuous protection of materials against wetting and moisture absorption.

I. Protect materials against damage by construction traffic.

J. Remove wet materials from project site.

K. Comply with fire and safety regulations.

L. Curable materials (i.e. - adhesives, sealants, primers, splice tapes, pourable sealers, pressure sensitive flashings, etc.) must

be stored between 60 degrees F and 80 degrees F. Store emulsions in temperature above 40 degrees F (4 degrees C).

1.07 JOB CONDITIONS (CAUTIONS AND WARNINGS)

A. Do not use oil base or plastic roof cement with EPDM roofing. Do not allow waste products, (petroleum grease or oil, solvents, vegetable or mineral oil, animal fat) or direct steam venting to come in contact with any roofing, insulation or flashing product. Do not expose membrane and accessories to a temperature in excess of 175 degrees Fahrenheit.

B. Splice cleaner, primer, cements and bonding adhesives are extremely flammable. Do not breathe vapors or use near fire or flame or in a confined or unventilated area. Dispense only from a UL listed or approved safety can.

C. Remove empty adhesive and solvent containers and contaminated rags from the roof daily and legally dispose of them daily.

D. Do not apply adhesives adjacent to open ventilation system louvers, or windows.

E. Temporarily cover the louvers and windows with 6 mil fire retardant polyethylene and prevent adhesive odors from entering the building. Remove temporary covers at the end of each days work.

1.08 SPECIAL CONDITIONS

A. Follow standard manufacturer's details on roofing, insulation and flashing conditions except as may be otherwise modified by drawings. Construct overall systems in a watertight, workmanlike manner, meeting the guarantee/warranty requirements specified herein.

B. Prepare surfaces scheduled to receive new roofing and flashing systems in accordance with manufacturer's instructions for specific system.

C. Insure that all drains, vents and other items that project thru the roof have been properly installed, flashed and secured into position and tested as applicable and approved by Commissioner.

D. Environmental Requirements

1. Apply roofing in dry weather
2. Do not apply roofing when ambient temperature is below 40 degrees F (4 degrees C) and falling not below 35 degrees F and rising. Do not apply over frozen or damp surfaces.
3. Use "hot boxes" for adhesives, flashings, pressure sensitive materials and the like used when temperatures are less than 60 degrees F.

E. Protection

1. Provide special protection or avoid heavy traffic on completed work when ambient temperature is above 80 degrees F (27 degrees C).
2. Restore to original condition or replace work or materials damaged during handling of roofing materials.
3. Protect paving and building walls adjacent to hoist prior to starting work.
   a. Lap suitable protective material at least 6 inches

(150 mm).

b. Vent polyethylene, if used, to prevent collection of moisture on covered surfaces.

c. Secure protective coverings against wind.

d. Leave protective covering in place for duration of roofing work.

F. All roofing system applications and other work of this section in conjunction therewith shall be completed as expeditiously as possible as they proceed so that as small an area as practicable is in the process of construction at any one time. The entire area of work begun each day shall be completed the same day, and all exposed edges shall be sealed against moisture penetration at the end of each day's work as specified elsewhere in this section. Temporary edge seals shall be removed at the start of each day's work.

1.09 CODE APPROVAL

A. Install roofing and insulation system components to meet the following minimum requirements:

1. Applicable Building Code.

2. Underwriters Inc. Class A fire rating for Roof Covering Materials.

Wind uplift resistance in accordance with ASCE 7-05: Minimum 75 Pounds per square foot of wind uplift resistance in field zones with adjustments at both the perimeter and corner zones as established by Exposure and Zone of project (See Structural Notes).

B. Provide written certification from the manufacturer, before beginning work, which states that the roofing system meets these requirements.

C. Provide written certification from the manufacturer, before beginning work, which states that the roofing system meets these requirements.

1.10 MOCKUP REQUIREMENTS

A. The purpose of each mockup will be to establish minimum standards of materials and workmanship and to assure that completed installations based on the mockups will be fully functional and will serve the purpose for which they have been designed.

B. Approved mockups may be left in place and incorporated into the permanent installation.

C. The Contractor shall not proceed with the purchase or fabrication of any "mockup" items until the procedure of mockup erection, inspection and approval is completed and documented.

D. Mockup shall consist of copings, cap flashings, gravel stops, gutters, ridges, and/or other major items of sheet metal and related work identified at the preroofing conference for the inspection and approval of the Commissioner, the Architect and his consultants.

E. Each mockup shall be constructed to show the following:

1. Type of metal.

2. Gauge of metal.

3. Color of metal (where applicable).
4. Cross sectional dimensions and shape of metal.
5. Related wood/metal blocking and/or plywood and other such attachment techniques and devices of these items.
6. Related masonry removal and restoration work.
7. Joining techniques for the metal.
8. Mitering techniques for the metal.
9. All other related materials and typical techniques as required to fully define the detailing of each mockup.

1.11 SPECIAL GUARANTEE/WARRANTY TERMS

A. For periods set forth below and commencing with the date on which the roofing system covered by these specifications is accepted by the City of New York, the Membrane Manufacturer warrants that said roofing system will remain in a watertight condition; and that said systems top covering described within these specifications will remain on the roof; further, as a part of these requirements, the Insulation Manufacturer further warrants that insulation on said roof will retain at least 80 percent of its' thermal resistance.

B. In the event the roof, or any portion thereof including, but not limited to -

1. Roofing, complete;
2. Base and cap flashings;
3. Insulation systems;
4. Metal flashing and trim work in connection with roof;
5. Copings;
6. Penetrations;

and the like, fail to so perform, the Membrane and/or Insulation Manufacturers and the Contractor jointly will, at their own expense, cause to be made the repairs or modifications to the systems, as may necessary to enable the systems to perform as warranted and to restore any adjacent damaged areas.

Defective work includes but is not limited to the following types of failure: leakage, delaminating, lifting, loosening, splitting, cracking, undue expansion and billowing of the membranes and the companion flashings; failure of any joint or other element of companion metal flashings; fillers and the like.

C. **The guarantee/warranty shall be known as a "SYSTEM OR SPECIFICATION WARRANTY" and shall be issued without exceptions.**

1. Guarantee/Warranty coverage shall remain in effect for gust wind speeds up to 72 miles per hour, measured at ground level at the site.
2. Guarantee and Warranty coverage shall have no dollar value limit.

D. Terms of manufacture guarantee/warranty - 15 years.

E. Coordinate guarantee/warranty requirements with Sections 07 60 00 and 07 61 10.

IT SHALL BE NOTED THAT ALL METAL FLASHINGS PROVIDED BOTH HEREIN AND AS PART OF COMPANION "FLASHING AND SHEET METAL" SECTIONS SHALL BE COVERED BY THE SYSTEM OR SPECIFICATION WARRANTY. NO EXCEPTIONS TO THIS REQUIREMENT WILL BE ALLOWED.

1.12 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.
   2. Water-soluble.
   3. Can be cleaned up with water.
   4. Non-flammable.
   5. Biodegradable.
   6. Low or preferably no Volatile Organic Compound (VOC) content.
   7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
   8. Manufactured without compounds that contribute to smog in the lower atmosphere.
   9. Do not contain methylene-chloride.
   10. Do not contain chlorinated hydrocarbons.
   11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

NOTE: It is a project requirement that any and all materials furnished for this work shall be asbestos free and shall be so certified to this fact by the contractor and each respective manufacturer.

2.01 RIGID INSULATION

NOTE: Insulation material shall be approved by the nominated roofing manufacturer for incorporation within the assembly and may be a branded form of material conforming to the listed requirements.

A. Insulation systems for metal roof deck areas under sheet membrane and protection board shall be a closed cell, HCFC free "green" polyisocyanurate foam panel manufactured with an hydrocarbon blowing agent and integrally bonded during the foaming process to non-asphaltic fiberglass mat facers on the top and bottom surfaces during the manufacturing process and conforming to the following standards.
   1. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Insulation Board.
   2. LTTR - Long Term Thermal Resistance, using techniques from CAN/ULC S770 based on ASTM C1303
   3. UL 263 - Fire Tests of Building Construction and Materials.
   4. UL 790 - Tests for Fire Resistance of Roof Covering Materials.

5. UL 1256 - Fire Test of Roof Deck Constructions.
6. ASTM E 2114-01 - Standard Terminology for Sustainability Relative to the Performance of Buildings
7. ASTM 2129 -01 - Standard Practice for Data Collection for Sustainability Assessment of Building Product
8. Factory Mutual Class I as per FM4450 and Class A as per ASTM E 108. Material shall meet wind uplift requirements set forth in Part 1 of this Section.

Material shall be furnished by the manufacturer of the membrane system or by such supplier approved by the manufacturer of the membrane so as insure conformance to the "system warranty" requirements contained herein.

B. Engineered Tapered Insulation system shall be factory engineered and fabricated using companion system to flat insulation as noted above.

C. Polyisocyanurate insulation shall conform to the following technical properties:
1. Thermal performance as per ASTM C 518: "**AGED**" values as determined in accordance with RIC/TIMA Technical Bulletin 281-1. Values shall be as set forth in Part 1 of this Section.
2. Water Absorption % Volume, ASTM C 209: < 1%.
3. Dimensional Stability, ASTM D 2126: 2%, max. 7 days.
4. Compressive Strength, ASTM D 1621: **not less than 25 psi**.
5. Foam core density, ASTM D 1622: not less than 2.0 pounds per cubic foot.
6. Moisture Vapor Transmission, ASTM C 355: < 1 perm.
7. Service Temperature rated from (-)100 degrees F to +250 degrees F.
8. Flame Spread, ASTM E 84: 25.

D. Insulation Protection Course
1. Acceptable product: G-P Gypsum Corporation - 1/4 inch Dens-Deck Prime roof board or USG 1/4 inch "Securock" or approved equal.
2. Composition: Glass mat faced gypsum with non-asphaltic, highly filled, proprietary, heat-cured coating on one side.
3. Size: Nominal 4 feet by 8 feet; Edges: Square.

E. Insulation Setting
1. Fasteners for mechanical attachment of insulation, insulation protection course and "deck barrier", to steel deck shall be as approved by the manufacturer of the roofing membrane to provide system compliance and shall be similar and equal to those units manufactured by OMG (12-11 Standard Steel Deck Screw); SFS/Intec (#12 Dekfast Fasteners); Carlisle (Insulfast); Grefco (Permafastener) or approved equal. Install in a pattern to achieve Factory Mutual rating for Class 1 construction for wind uplift as indicated in Part 1 and modified for project location. Fasteners shall be of thickness to penetrate deck by a minimum of 3/4

inch/maximum of 1-1/2 inches plus the thickness of the overall insulation and accessory assembly.

2. Fasteners for mechanical attachment of assembly to structural concrete decks shall be as for E.1 above and shall be similar and equal to the "OMG Heavy Duty Roofing Fastener" with a shank diameter of .190" and a thread diameter of .245. The fastener must have 10 threads per inch and have a 30° spade point; fastener shall be heat treated and used with a Factory Mutual approved round pressure plate. Coat fastener with CR-10 corrosion resistant coating which when subjected to 30 Kesternich cycles (DIN 50018), the fastener must show less than 15% red rust and surpass Factory Mutual Approval Standard 4470.

3. As an acceptable alternative to mechanical fastenings (and based upon temperatures), secure insulation to prepared substrates through the use of a single component, moisture cured polyurethane adhesive; VOC compliant, Low Odor; 100% solids similar and equal to:
   a. Dow Chemical "INSTA-STIK Professional Roof Insulation Adhesive"
   b. ASHLAND CHEMICAL "Pliodeck Insulation Adhesive"
   c. Millennium Adhesive Products "Weather-Tite One Step Foamable Adhesive"
   d. Johns Manville "Urethane Insulation Adhesive"

   and provided in "layout" required to conform to the FM wind uplift requirements set forth in Part 1 above.

2.02 "EPDM" ROOFING MEMBRANE

A. Reinforced fire rated roof membrane material shall be 0.060 inch thick in factory fabricated sheets in the largest practical size to eliminate field jointing and shall be of an "EPDM" compounded elastomer conforming to the following minimum physical properties.

Properties	Test Method	Specification
Color		Grey/Black
Specific Gravity	ASTM D 297	1.18+/-0.03
Tensile Strength	ASTM D 412	1400 psi min.
Elongation	ASTM D 412	350% min.
Tear Resistance, Die C	ASTM D 624	125 lb/in min.
Shore A	ASTM D 2240	60+/-10
Ozone Resistance	ASTM D 1149	No Cracks
Heat Aging	ASTM D 573 7 days/240 degrees F.	Ten. min. 1200 psi elong, 210% min.
Brittleness Temp.	ASTM D 746	-75 degrees F
Permeability	ASTM E 96	2.0 perm/mils

B. Membrane shall be furnished only by manufacturer of the membrane -

1. Carlisle SynTec Systems - Sure-Seal Black
2. Firestone Rubber Company.

3. Or approved equal.

In the event that other systems are submitted for use in this project, **the nominated roofing system supplier shall include a 3rd party warranty for the actual membrane, membrane flashings and membrane accessories** as part of the submittal package. Without this 3rd party warranty, the submittal will be **rejected**.

C. Membrane shall be provided with all required accessories, flashings and the like as necessary and/or required to provide a complete installation.

2.03 FLASHINGS/STRIP SYSTEMS

A. Flashing for all "epdm" roofing systems shall be one, or all, of the following as applicable to intended use each as furnished by the membrane manufacturer compatible with nominated roofing membrane.
   1. Pressure-sensitive, 40 mil semi-cured EPDM laminated to a 30 mil cured, preapplied adhesive.
   2. Cured cleaned 60 mil nonreinforced EPDM.
   3. Uncured 60 mil EPDM material for use in forming of corners, sealer pockets and the like.

B. Securement strip devices shall be a reinforced universal design EPDM membrane material in either 6 inch or 9 inch widths as applicable to intended use. Material shall be either standard or pressure sensitive design. Seam plates shall be provided as necessary for particular systems.

2.04 MISCELLANEOUS ITEMS IN CONNECTION WITH "EPDM" ROOFING SYSTEMS

A. All such items required and enumerated below shall be supplied by the manufacturer of the selected roofing membranes and shall be suitable for the intended applications.

B. Primers, bonding adhesives, splicing adhesives and the like shall be compatible with all materials to which the membrane is to be bonded.

C. Splicing cleaner and cement.

D. Inseam and lap sealants. **NOTE: Splice tape seals with lap sealant is an acceptable alternative.**

E. Water Block Seal: One component low viscosity butyl rubber sealant.

F. Prefabricated accessories (pipe seals, etc. all fabricated with pre-applied adhesive).

G. Stripping: Two layers of 70 mil thick self adhering flashing, consisting of 45 mils of semi-cured EPDM factory laminated to 35 mils of cured seaming tape, in each layer.

H. Seam Tape Primer and Tape: Synthetic rubber polymer based primer designed to clean and prime seam tape spice areas prior to installing the tape. Tape - cured polymer self adhesive tape with release paper carrier, 7 inches wide.

I. Nite seal.

J. Pitch Pocket Filler - UWM-285, 2 part urethane by Gates Engineering Co. or approved equal.

K. Rubber nailing strips (RNS)

L. Cant Strips, Blocking, etc. - See Section 06 00 00. Creosoted or asphaltic treated lumber shall not be used. **FIBER PRODUCTS ARE NOT PERMITTED IN THE WORK**

2.05 WALKWAY SYSTEMS

A. Shredded and compressed rubber walkway system in 30 inch wide by 30 foot long rolls in 5/16 inch thickness or 30 inch square pads at option of Contractor and/or in combination. Adhesive: Sure-Seal Splicing Cement.

2.06 ROOF PENETRATIONS AND ACCESSORY ITEMS

A. Prefabricated units with adjustable stainless steel clamps and sealant band.

Where penetrations are other than round, assemblies shall be square and fabricated from suitable metal materials and either shall receive a canopy hood or be formed and filled with a liquid rubber sealant of a formulation suitable for retaining device.

2.07 LEAK DETECTION SYSTEM

A. Provide products that are accepted by the membrane manufacturer and are fully compatible with the indicated substrate and other components.

B. System Description - LV-ELD (Electronic Leak Detection) Detection System: Leak detection equipment shall deliver pulsating low voltage to create an electronic potential difference between the roof membrane surface and the structural deck. Using a receiver, the technician will vector in on breaches identified by an electronical connection.

C. Materials

1. Conductive wire used to deliver pulsating charge around perimeter of area being tested and to isolate grounds shall be a composite polywire has 9 strands of .07 inch stainless steel wire interwoven into the braided polyethylene strands.
2. Tapes and sealants used to secure conductive wire shall be compatible with manufacturer's membrane.

2.08 ROOF DRAINS - Gutter System Only; Flat Roof Drains provided by Plumber

A. Conventional cast iron primary and overflow roof drains, installed with drain receivers, under deck clamps if appropriate, cast iron strainers, cast iron clamping rings and factory installed stainless steel gravel screens Series 1011 as manufactured by Jay R. Smith Manufacturing Company, Marathon, Zurn or Josam.

B. Furnish the overflow drain with a raised nipple which finishes 2 inches above the roof surface.

C. The drain outlet size and style shall match the building drain line, except if the drain line is a copper pipe, then furnish the drain body with a threaded outlet and use a male adapter to connect the drain body to the drain line.

D. Primary and overflow drain pipe: 4 inch diameter cast iron with no hub fittings.

E. Insulation: 1 inch thick pre-molded 3.5 lb. heavy density fiberglass pipe insulation, UL rated non-combustible with service jackets and prefabricated elbow covers.

F. No-hub couplings: heavy duty rubber neoprene sleeve couplings with full length Type 304 stainless steel shields and at least 4 worm drive clamps, conforming to ASTM A564.

2.09 Balance of materials required for the work shall be as specified elsewhere in this section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE - GENERAL

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

B. On all surfaces shown to receive roofing application, preparation shall be taken as/Paragraph 1.05 herein. All system applications, and other work in conjunction therewith, shall be completed as expeditiously as possible as it proceeds, so that as small an area as practicable is in the process of construction at any one time.

C. Construct the entire new roofing system in a watertight, workmanlike manner, meeting the guarantee requirements specified herein; in strict accordance with the drawings and in conformance with the Manufacturer's requirements, except as enhanced in this specification.

D. Clean the surface upon which roofing system components will be applied, of all laitance, dirt, oil, grease or other foreign matter which would in any way affect the quality of the installations placed thereon.

E. Install components of the roofing, insulation, and flashing system on dry surfaces only. Do not install any items when weather conditions and outside temperatures are not suitable in accordance with the Manufacturer's recommendations.

F. Complete all work in sequence as quickly as possible so that as small an area as practicable is in the process of construction at any one time. Complete the entire area of work begun each day, the same day, and make all exposed edges watertight at the end of each day's work.

3.02 DECK REPAIRS

A. Repair concrete deck surface defects less than 1/2 inch deep with quick setting non-shrink concrete grout as Base Bid work.

B. Concrete Grout: Fast setting Portland cement based polymer modified repair mortar grout as manufactured by The Quikrete Companies, under the trade name Quick-Setting Cement, or equal.

C. Notify the Commissioner and obtain direction if concrete deck deterioration greater than 1/2 inch deep is discovered.

D. Maintain the building watertight in the interim, but do not install new roofing system components until deck defects are corrected.

3.03 BASE DECK PREPARATION

A. Install reinforced vapor retarders in accordance with manufacturer's instructions.

B. Install vapor retarders continuously at locations on roof deck as indicated on the drawings. Ensure there are no discontinuities in vapor retarder at seams and penetrations.

C. Install vapor retarders in largest practical widths.

D. Ensure surface beneath vapor retarder is smooth with no sharp projections.

E. Join sections of vapor retarder and seal penetrations in vapor retarder with mastic tape. Ensure vapor retarder surfaces to receive mastic tape are clean and dry.

F. Immediately repair holes in vapor retarder with self-adhesive repair tape.

G. Seal around pipes and other penetrations in vapor retarder with pipe boots in accordance with manufacturer's instructions.

3.04 INSULATION INSTALLATION

A. Install insulation, so that the top layer of insulation (to which the membrane is adhered is a minimum of 1-1/2 inches thick. Install crickets and tapered boards thinner than 1-1/2 inches under boards which are thicker than 1-1/2 inches so that the top layer of all multi-layer insulation systems is a minimum of 1-1/2 inches thick.

B. Install tapered insulation neatly cut at all miters and transitions. Do not lace corner boards.

C. Install insulation with joints offset between rows a minimum of 12 inches. Stagger joints in the top layer of insulation a minimum of 6 inches from joints in the bottom layer of insulation. Cut insulation to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

D. Fasten all layers of insulation and the fire barrier (if required) to the top flute of steel decks only with screws and discs which penetrate through the deck a minimum of 3/4 inch and a maximum of 1-1/2 inches or urethane adhesive as specified hereinbefore. Fastener and/or adhesive pattern shall be as required by specified wind uplift requirements set forth in Part 1 and not the Manufacturer's minimum fastener quantities.

E. Where insulation is used as basic pitching medium, install same in accordance with approved drainage layout pattern. Minimize joint over joint conditions.

F. Protect all insulation against damage. Lay no more insulation than can be covered with complete roofing system in one day.

3.05 "EPDM" ROOFING SYSTEM APPLICATION - SPECIFICS

A. Membrane systems shall be installed in strict accordance with standard specifications promulgated by the manufacturer and as may be modified below.

1. Fully Adhered System - Carlisle SynTec "Design A"

B. Provide retainer system at turned up membrane at all perimeters, changes in plane, penetrations and the like by securement of either extruded rubber nailing strip (RNS) or reinforced universal securement strips. RNS retaining devices shall be secured to vertical surfaces only. With use of "RNS" systems, provide treated wood blocking at preformed curb openings and other areas where base construction not suitable for vertical attachment.

C. Position the roofing membrane over the substrate without stretching it, and allow it to relax approximately one hour prior to adhering it to the substrate or forming seams.

D. Position adjoining sheets in same manner lapping the edges a minimum of 6 inches.

E. Fully adhere EPDM sheets to the substrate with bonding adhesive at the rate of approximately 60 square feet per gallon and allow bonding adhesive to dry to the touch before joining EPDM to substrate. Roll the EPDM onto the dried bonding adhesive and immediately rub it vigorously with a soft bristle broom to ensure complete adhesion.

3.06 SPLICING

A. Form all membrane splices with 7 inch wide seam tape.

B. Fold top sheet back about 10 inches. Clean both mating surfaces at splice area using clean rags with splice wash.

C. Scrub a smooth coat of approved primer to both mating surfaces, with long strokes obtaining complete coverage, at the rate of approximately 225 square feet per gallon. Do not allow the primer to glop, streak or puddle. Allow it to dry to the touch before installing the seam tape.

D. Install the seam splice tape on to the bottom sheet of EPDM membrane, using guide marks to position it so 1/8 inch minimum and 1/2 inch maximum will be exposed out of the seam when the seam is complete.

E. Roll and allow the top sheet to fall freely into place without stretching or wrinkling it.

F. Pull the splice tape release paper from within the seam area and neatly mate the seam using hand pressure to rub the membrane together.

G. Immediately roll the splice with a 2 inch wide roller, using positive pressure, toward the outer edge of splice.

H. Install 12 inch square uncured EPDM surface patches, with rounded corners, over all T-Seam intersections.

3.07 PERIMETER FASTENING

A. Secure the membrane at slope changes greater than 1 inch in 12 inches, with discs spaced 6 inches on center or by adhering it to continuous reinforced EPDM fastening strips. Fasten disc and EPDM strips 6 inches-on-center.

B. Provide retainer system at turned up membrane at all perimeters, changes in plane, penetrations and the like by securement of either extruded rubber nailing strip (RNS) or reinforced universal securement strips. RNS retaining devices shall be secured to

vertical surfaces only. With use of "RNS" systems, provide treated wood blocking at preformed curb openings and other areas where base construction not suitable for vertical attachment.

3.08 FLASHING

A. Utilized cured EPDM for all flashings; utilize self curing EPDM at corners and angle changes only where required by the Manufacturer.

B. Form flashing splices, and the splice between the flashing and main roof sheet with 7 inch seam tape.

C. Adhere the flashing to vertical surfaces with bonding adhesive.

D. Fasten the top edge of all flashings, positioning the fasteners 6 inches-on-center, to be covered by the cap flashing.

E. Install premolded pipe flashings wherever possible. Where premolded pipe flashings cannot be installed, use field wrapped flashings. Install pitch pockets as a last resort.

F. Install two plies of stripping on metal flanges. The first ply shall be 5 inches wide, the second ply 9 inches wide.

3.09 DRAIN INSTALLATION

A. Remove and replace the existing primary roof drains.

B. Remove the existing roof drains and flashings, exercising care not to break or disturb the drain piping within the building.

C. Modify the existing drain lines to properly connect to new drain assemblies, enlarge the hole in the deck and reinforce the deck as needed to accommodate the new drain.

D. Install the primary drains flush with the deck surface in insulation sumps to achieve maximum drainage.

E. Install the overflow drain flush with the roof surface.

F. Support the drains with a stamped sump drain receiver, secure them with under deck clamps and patch the deck around the new drains - as needed.

G. Connect the new primary drains to the existing drain lines to conform to all applicable codes, and insulate the underside of the new drain and drain line.

3.10 MISCELLANEOUS

A. The Contractor shall provide all caulking in conjunction with roofing and sheet metals where shown and/or required. Where metal and/or fabric flashing is set into reglets, top edges of flashing shall be hooked into reglet and embedded into a bed of sealant. Lead wedges shall be inserted therein and spaced 10 inches on center and then overcaulked with sealant seated into reglet space.

B. Sealant shall be Type IV as/Section 07 90 00.

C. Every precaution shall be taken to prevent direct contact between dissimilar materials by the installation of an insulating layer of 15 lb. saturated fabric felt embedded in an approved liquid membrane material; 30 mil thickness.

D. Provide all miscellaneous roofing, flashing and metal work shown on drawings or otherwise required to leave all work complete and entirely watertight, neatly and carefully executed in a thorough and workmanlike manner generally as herein specified for other similar items of work.

E. Items not covered elsewhere in this Section shall be as indicated on the drawings and/or as required to provide a complete weathertight installation.

3.11 COORDINATION

A. The Contractor shall coordinate all roofing and metal work with all associated work specified under other sections of the work in the preparation for and the installation of roofing, flashings and other items.

B. Locate fasteners to avoid electrical conduits and wiring, fixtures and equipment as well as any fluid carrying piping, duct work and the like.

3.12 TESTING

A. Upon completion of the roofing, the roofer may, at the Commissioner's request, be required to perform a roof test program to evaluate the overall system. The program will be established between the roofing manufacturer, the installer and the Commissioner. If faults are evidenced, the roofer will, at his own expense, make corrections satisfactory to the Commissioner and the Roofing Manufacturer.

B. Leak Detection Installation Testing - Verify membrane assembly and visually examine area to be tested. Materials, debris and equipment must be removed from area to be tested. Grounds must be located for creating an electronic charge in the structural deck. Install perimeter and isolation wire. Install perimeter wire within 4"-6" of base flashings. No single area shall exceed 5000 SF. Secure wire using materials compatible with membrane and acceptable to membrane manufacturer. Turn on equipment and verify ground lead is activating structural deck.

C. Testing: Area tested must be wet to provide an electronically charged field. Wet membrane using a hose or shortly after precipitation. Identify membrane breaches, mark number and plot location. Photograph breach for documentation. After breaches have repaired, complete confirmation testing to assure repair is watertight. Prepare and submit report.

3.13 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Provide the equipment, materials and labor necessary to adequately protect the site, the building, and its contents and occupants, from damage due to the construction work or from inclement weather during construction.

B. Do not perform work during inclement weather. Make work areas watertight at the end of each day's work. Provide temporary coverings and maintain the building in a watertight condition as the work progresses.

C. Clean up frequently, at least once a day, refuse, rubbish, scrap materials and debris, so the work site presents a neat, orderly and workmanlike appearance at all times.

D. Take precautions to insure against adhesive drippage around pipes, drains, and any other openings through roof. Do not over apply adhesive on the exterior face of the building or on mechanical

equipment or the interior face of the parapet above cap flashing. Clean surfaces which are soiled or damaged.

E. Conduct a complete inspection of the interior and exterior of the building and submit a written report of any leakage or damage which exists, to the Commissioner, prior to starting work.

F. The Commissioner will conduct a similar inspection at the completion of the work, and the Contractor will be back-charged for all leakage or damage which was not documented in the Contractor's report.

G. Protect finished roof areas from damage during construction.

3.14 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

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SECTION 07 60 00

FLASHING AND SHEET METAL

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all flashing and sheet metal work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

NOTE: All blockings required for the attachment of work of this section to the basic structure shall be provided by this Specialty Contractor in accordance with the material requirements and labor restrictions set forth in Section 06 00 00 of these specifications. Evidence of compliance with wind uplift resistance shall be provided as part of the submittal requirements.

1. Coordinate with Section 05 74 11 for stainless steel brake formed sill element to close existing windows to restored cast iron. Material shall be a minimum of 24 gauge, hemmed and formed to provide interconnection at window sill and drip over cast iron. Element shall be set on restored (parged) substrate and secured to substrate with gasketed fasteners at 24 inches on center and sealed at vertical junctures. Material shall be isolated from dissimilar metals.
2. Provide 0.040 inch painted aluminum coping cover at existing cast stone parapet cap. Provide drip front and rear and secure over a "eps" foam bedding.
3. Provide new roof drain flashing pans as required; provide overflow scuppers at roof drain locations. Scuppers shall be lined with stainless steel material.
4. Provide new "gravel stop" and blocking at elevator bulkhead roof perimeter.
5. Turn up existing copper cap flashing at all vertical junctures of courtyard flat roof to receive new membrane base flashing; turn down, solder open joints and seal linear top joint. For purposes of bid, allow for 15% replacement of flashing with 16 ounce plain copper.
6. Provide at all junctures of stucco to steel, granite, brick and the like, formed 28 gauge stainless steel brake formed flashing carried over bed and down face ½ inch.
7. Provide balance of prefinished, preformed metal flashings as required to complete the work.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 06 00 00 - Carpentry

B. 07 22 00 - Roof Insulation - Nail Base Type
C. 07 53 00 - Membrane Roofing (EPDM)
D. 07 61 10 - Metal Roofing
E. 07 90 00 - Caulking and Sealing/Joint Sealants
F. 08 63 00 - Skylights, Metal Framed and Custom

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.

B. The Contractor shall coordinate all roofing and metal work with all associated work specified under other sections of the work in the preparation for and the installation of roofing, flashings and other items. Ensure best possible weather resistance and durability of the work and protect materials and finishes.

C. All materials furnished under this Section shall be installed with expedition as required. All materials provided under this Section shall conform to established industry practice and standards governing same.

D. Work shall only be performed when the weather is dry, clear, and sunny, and weather reports call for a continuation of dry weather. Contractor shall fully cover exposed work as required to provide adequate weather protection, and shall be held responsible for any and all damage to the existing building resulting from, or caused by, the work of this section of the contract.

E. Systems shall be compatible with and approved by the manufacturer of the selected roofing system.

F. See drawings for applicable notes and details on flashing conditions. Construct in a watertight, workmanlike manner, meeting the guarantee requirements specified in Sections 07 53 00 and 07 61 10.

G. References

1. Sheetmetal and Air Conditioning Contractors National Association (SMACNA).
2. Copper Development Association (CDA).
3. American Society for Testing and Materials (ASTM).
4. Federal Specifications (FS).
5. Aluminum Association, Design System for Aluminum Finishes (AA).
6. American Architectural Manufacturers Association (AAMA), standards as referenced herein.
7. Factory Mutual Engineering & Research (FM), Loss Prevention Data 1-49, Perimeter Flashing, June 1985.
8. Single Ply Roofing Institute (SPRI), Wind Design Guide for Edge Systems used With Low Slope Roofing Systems, 1995 Edition.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any

or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop drawings and samples shall be submitted in accordance with the requirements established in DDC General Conditions and shall consist of the following:
   1. Shop drawings showing layout, joining, profiles, and anchorages of all fabricated work.
   2. Samples - 2 of size adequate to show appearance and performance characteristics of all materials, including fasteners to be used on the job.
   3. Product Data - Manufacturer's product specifications, installation instructions and general recommendations for each specified material and product including interface with adjacent materials and surfaces.

B. Material Safety Data Sheet (MSDS) must be submitted for each product.

C. This Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

D. Certification of Specification Compliance.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered to the job site in unopened, original containers, identified with the manufacturer's name and brand, and labeled with pertinent information regarding grades, quantities, types, etc.

B. Materials shall be stored under conditions recommended by the manufacturer.

C. Handle materials to prevent damage to surfaces, edges and ends of sheet metal items. Reject and remove damaged material from site.

1.07 SPECIAL GUARANTEE/WARRANTY TERMS

A. General manufacturer guarantee/warranty for work herein shall compliment that issued under Sections 07 53 00 and 07 61 10 with the following additions:
   1. Contractor shall agree (and he does so agree) that all flashings shall be valid as a 2 year endorsement as part of, and inclusive with, the 15 year guarantee required for the membrane roofing and for the metal roofing. It shall be

understood that the flashing provided conforms to materials and workmanship for a 2 year endorsement as promulgated by the manufacturer.

2. Provide separate manufacturer's warranty warranting fluoropolymer coating to remain free, under normal atmospheric conditions, from peeling, checking or cracking (except for slight crazing as may occur on tightly roll-formed edges or brake bends at time of forming prepainted sheet), chalking in excess of numerical rating of 8 when measured in accord with ASTM D 659-86, or fading in excess of 5 N.B.S. units during 20 year warranty period.

B. The overall guarantee/warranty shall be issued without exceptions.

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 FLASHING MATERIALS - GENERAL

A. Aluminum: B 209 Alloy, Alclad 3003, Temper H-14 OR 6063-T5 alloy for extrusions each in finish as noted below.

1. Fluoropolymer coating finish: 2 coat, shop-applied, baked-on fluoropolymer coating system based on Atochem North America, Inc., Kynar 500 resin or Ausimont U.S.A., Inc., Hylar 5000 resin (polyvinylidene fluoride, PVDF), formulated by a licensed manufacturer and applied by manufacturer's approved applicator to meet AAMA Publication 2605. Coating system shall provide minimum 1.0 mil dry film thickness consisting of minimum 0.20 mil primer and minimum 0.80 mil color coat. Color shall be "Grey".

B. Stainless Steel: ASTM B 167A, Type 304 with No. 2D annealed finish of dead soft temper material.

C. Galvanized Steel: ASTM A 93, gauge as required.

2.02 ACCESSORIES AND FASTENERS

A. Solder composition - as specified in Table 5 of ASTM B 32 as suitable for material used.

B. Flux - Type R or modification thereof as per Article 7.2 of ASTM B 32 specifically designed for use with specified sheet metal All acid is to be thoroughly washed off after soldering is completed.

C. Nails - "Stronghold" type large flat head roofing nail not smaller than No. 12 stub gauge and of sufficient length to penetrate the wood blockings, nailers, etc., not less than 7/8 inch long.
   1. For Stainless Steel: Stainless steel.
   2. For Aluminum: Aluminum

D. Screws, Bolts, and other Fastening Accessories
   1. For Stainless Steel: Stainless steel.
   2. For Aluminum: Aluminum

E. Anchors - Provide one of the following types: (Coordinate with Section 06 00 00)
   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 sealing washer compatible with membrane used.
   2. Self-tapping, corrosion resistant, concrete and masonry screw inserted thru a stainless steel disc with an sealing washer compatible with membrane used.

F. Brazing compound - highest grade.

G. Sealant - low modulus, one part, silicone sealant, No. 795 by Dow Corning Company. Color shall match adjacent mortar joints when sealant joints are visible.

H. Roofing felts - 30 lb. saturated asphalt type.

I. Slip sheets - 6 lb. rosin sized building paper.

J. Bituminous Coating (for separating dissimilar metals): FS TT-C494.

K. Water Barrier: See Sections 07 53 00 and 07 61 10. Material shall be a Self-Adhering, High-Temperature Sheet: 40 mils thick minimum; consisting of an asphalt-free adhesive of butyl with release-paper backing; cold applied.

2.03 PREFABRICATED/PRE-ENGINEERED ALUMINUM FASCIAS

A. For purposes of establishing a standard of quality and not for the purposes of limiting competition, the basis of this material specification is upon products as manufactured by W.P. Hickman; Architectural Products or Southern Aluminum Finishing Company, Perimeter Systems Division conforming to the following.

B. Extruded TerminEdge Roof Edging: A two-part assembly with a rigid extruded termination base plate, and a decorative snap-on fascia cover for single-ply roofs. The system shall have all concealed fasteners with no penetration on horizontal roof surface.

C. Retainer base plate: Shall be .100 extruded aluminum with .187" x .375" slotted holes for fasteners @ 12" (305 mm) on center in 10'-0" (3048 mm) standard lengths. Install with field-applied waterproof sealant by roofing membrane manufacturer. 24 ga. galvanized steel or .050" aluminum extender cleat for face sizes above 6.75".

D. Exterior fascia cover shall be 0.040" aluminum in 10'-0" (3048 mm) lengths for all sizes; concealed, matching 4" (102 mm) wide .032" joint splice plates.

E. Fasteners: Stainless steel hex head screw type provided by the manufacturer.

F. Exterior fascia finishes: See above in Part 1.
G. Corners, end caps, fascia sumps, or spill outs, etc. shall be fabricated by the roof edging manufacturer. Factory fabricated mitered corners shall have 12" nominal (305 mm) leg lengths.
H. Provide matching ledge caps, downspouts, or other special fabrications as detailed.

2.04 PREFABRICATED/PRE-ENGINEERED ALUMINUM COPINGS

A. For purposes of establishing a standard of quality and not for the purposes of limiting competition, the basis of this material specification is upon products as manufactured by W.P. Hickman; Architectural Products or Southern Aluminum Finishing Company, Perimeter Systems Division conforming to the following.
B. Permasnap Coping: Metal coping cap with galvanized steel anchor cleats and gutter support chairs for capping any parapet wall. The system shall be watertight, maintenance free, and not require exposed fasteners or sealant. Joints shall be butt type with concealed splice plates.
C. Performance characteristics: Coping sections shall expand and contract freely while mechanically locked in place on anchor cleats. Coping sections shall lock to anchor cleats by mechanical pressure from support chairs. All coping cover joints shall be underlayed with gutter/support chairs capable of draining water.
D. Metal: .040" aluminum for all sizes
E. Coping cap: Length of 10'-0" (3048 mm); width as shown
F. Coping vertical face and back leg: standard 4" (100 mm) or as may be shown on the drawings.
G. Internal splice plates: Shall be concealed with matching finish to maintain outside face continuity.
H. Coping Cleat: 16 or 20 gauge galvanized steel anchor cleat; normally 12" (305 mm) wide @ 5'-0" (1524 mm) on center to be mechanically fastened as indicated and detailed.
Gutter/support chair: Metal Gutter Chair in color and finish to match coping cap.
I. Fasteners: Shall be stainless steel screw type with a minimum pull-out resistance of 240 # (109 kg) as supplied by the manufacturer per substrate application. No exposed fasteners shall be permitted.
J. Finishes: See Part 1 above.
K. Corners, end caps, pier caps, etc. shall be fabricated by the coping manufacturer. Welded or METAL-LOCK® assembly shall be used to maintain watertight integrity..

2.05 FABRICATION - PRE-ENGINEERED SYSTEMS

A. Prefabricate system in manufacturer's plant to greatest extent possible.
B. Miter and weld joints in tops and faces of corners and transitions or bend outside corner and weld joint in top and inside corner. Continuously weld all joints in curved sections. Perform welding prior to finishing.
C. Pop rivets, interlocking discontinuities and other exposed fasteners exposed in finished work are not acceptable.

2.06 MISCELLANEOUS

A. Vent stacks - prefabricated boots in membrane and 26 gauge stainless steel in metal roof.

B. Pitch Pockets - 26 gauge stainless steel , to finish 4 inches high. All seams shall be soldered; fill with non-shrink grout to within 2 inches of surface, top with "liquid rubber" to within 1 inch of surface. Pitch Pocket Filler - similar and equal to "UWM-285", 2 part urethane by Gates Engineering Co.

C. Step flashings - 28 gauge 2D stainless steel will be furnished for all junctures of metal roofing to side wall construction. Joints shall be mechanically made, with fillers, and shall be jointed for expansion as necessary.

2.07 SCUPPERS - As required all fabricated from minimum 24 gauge 2D stainless steel unless in conjunction with aluminum and then same shall be fabricated from minimum 0.050 inch prefinished coil stock in color and finish as set forth above.

2.08 Balance of materials required for the work shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 SHEET METAL WORK

A. All metal required for the work of this Section shall conform to the requirements set forth in Part 2 above and the general specifications stated below.

B. Cleaning - wet joints to be soldered and surrounding area with clean water and soft bristle brush. Wash with acid neutralizing solution and rinse with clear water and dry.

C. All stainless steel work shall be fabricated and installed as detailed and/or required in accordance with the best industry practice. Where applicable under Specification, all metal work shall conform to the recommended practices and standards of the "Committee of Stainless Steel Producers, 'AISI, Manual of Suggested Practices, Revised 1972"; further, except as otherwise indicated, comply with manufacturer`s installation instructions and recommendations promulgated under the "Architectural Sheet metal Manual" published by the Sheetmetal and Air Conditioning Contractors national Association (SMACNA).

3.03 FABRICATION AND INSTALLATION - GENERAL

A. The flashing shown as a single heavy line on the drawings is diagrammatic, and the Contractor may fabricate in a single width of the heaviest required gauge or in component widths with various required gauges, properly connected for watertightness and allowance for variations in thermal expansion due to difference in

gauges and exposure.

B. Where various gauge widths are connected or in making up long continuous lengths, all joints, except loose locked joints and where expansion provisions are required, shall be flat locked and soldered and shall show the least possible amount of solder. Soldering may be used only to fill and/or seal joints, and shall not be relied upon for mechanical strength. Corners shall be mitered with flat lock seams and sealed or soldered depending upon material.

C. Fabricate all joints, laps, splices and connections so as to shed water and condensation in the direction of intended flow.

D. Make adequate provisions to compensate for thermal changes in all sheet metal work. Details of expansion joints shall be submitted for approval. Provide for expansion joints every 20 to 24 feet.

E. Install nailers in accord with manufacturer's product data and in accord with FM and SPRI Wind Design Guide requirements. Every precaution shall be taken to prevent direct contact between dissimilar materials by the installation of an insulating layer of felt as per Part 2 embedded in an approved plastic roofing cement. Securely fasten all work and anchor to formed metal or nailers, except as otherwise shown or specified, confine nailing or screwing to one edge of metal only. Where concealed blocking cannot be provided, use lead expansion shields and secure with nonferrous screws for screw application. Nails or screws shall not be over 24 inches apart. Where nailing is not feasible, sheet metal shall be fastened with cleats. Cleats shall be approximately 12 inches o.c. and not less than 2 inches by 3 inches of the same material and weight as the sheet metal being installed. One end of cleat shall be secured and the edge folded back over the nail or screw heads. The other end of the cleat shall be locked into the folded edge of the basic sheet metal members.

F. Fabricate and install "Snap lock" type copings with cleat type seats extending full width of parapet and spaced at 48 inch centers. Infill entire area with "eps" insulation cut to slope taper. Fabricate coping covers in 8 foot lengths to the profile shown on the detail and as required by actual field conditions. Form a 1 inch high standing seam expansion joint at intervals not to exceed 24 feet on center. Lap and fasten all other joints and special conditions with copper rivets 2 inches on center, and fully soldered.

G. Fabricate fascias in 8 foot lengths to the profile shown on the detail and as required by actual field conditions. Provide a 6 inch wide cover plate at each joint, fully embedded in continuous sealant. All special conditions, terminations and corners will be headed off and soldered.

H. Balance of all formed metal work shall be "shop fabricated" and shall accurately reproduce the detail and design shown, and profiles, with bends and intersections sharp, true and even. Preformed units shall have surface applied battens unless otherwise shown and/or specified.

I. Install work with laps, joints and seams which will be permanently watertight and weatherproof, and shall be without waves, buckles, or distortion.

3.04 PREFABRICATED FASCIA INSTALLATION

A. Install fascia system in accord with manufacturer's product data and approved shop drawings, except where more stringent requirements are specified, to achieve an FM Zone 3 wind uplift classification.

B. Install cant dams continuous, lap joints 1 inch; fasten at 1 foot o.c. maximum at roof edge; 2 feet o.c. maximum at face of wall. Install concealed splice plates at intersections in accord with manufacturer's product data.

C. Install fascia covers over cant dams and splice plates, with minimum 1/4 inch wide gap over splice plate intersections. Set fascia covers over splice plates. Secure fascia with Lok-Tite flashing and Lok-Grip anchors, 1 foot 7 inches o.c.

D. Make weathertight fit, allowing for expansion and contraction as recommended by manufacturer s product data.

E. Attach materials using stainless steel Lok-Grip fasteners as provided by manufacturer. In no case shall fasteners penetrate cant or roofing membranes unless protected by additional flashing details as approved by roof membrane manufacturer.

3.05 PREFABRICATED COPING INSTALLATION

A. Install coping system in accord with manufacturer's product data and approved shop drawings, except where more stringent requirements are specified, to achieve an FM Zone 3 wind uplift classification.

B. Install anchor plates with concealed fasteners at 6 feet o. c. maximum. Install concealed splice plates at coping intersections.

C. Snap copings into place over anchor plates and splice plates, with minimum 1/4 inch wide joints over splice plate intersections. Set copings over splice plates in with extruded butyl tape, 1/2 inch from intersection edges.

D. Make weathertight fit, allowing for expansion and contraction.

3.06 INSTALLATION, SPECIFICS

A. Surfaces to which sheet metal and related roofing is to be applied shall be smooth, sound, clean, dry, and free from defects that might affect the application. Inspect all sheathing and blocking, and replace any defective material with matching new sheathing and/or blocking as required.

B. All work shall have an underlayment of asphalt felt with a slip sheet of rosin sized paper or a self-adhering membrane application between all metal flashing and roofing.

C. Step flashings - Joints shall be mechanically made, with fillers, and shall be jointed for expansion as necessary.

3.07 MISCELLANEOUS

A. Provide all caulking in conjunction with roofing and sheet metals where shown and/or required by the manufacturer of the roofing system.

B. Items not covered elsewhere in this Section shall be as indicated on the drawings and/or as required to provide a complete weathertight installation.

3.08 PROTECTION

A. Protect construction, adjacent work and finished work from and damage.

B. Damage caused by the handling, storing, mixing or application of materials or the failure to provide adequate protection shall be repaired or replaced at no additional cost to the City of New York.

3.09 CLEANING, ACCEPTANCE AND PATCHING

A. Clean all surfaces of metals remaining exposed in the finished work free from paint, grease, labels and other items using material non-incursive to the finish and in strict accordance with manufacturers' instructions after the roofing is complete.

B. Exposed surfaces of the building or components thereof, whether provided under this trade section or not, and which have been soiled or damaged by the work of this section shall be cleaned and repaired at no cost to the City of New York.

C. All sidewalks, parking areas, and grounds accessed during construction shall be returned to their original condition and shall be left clean and free of any deposits such as roofing mastic, adhesives and the like.

3.10 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 07 61 10

SHEET METAL ROOFING

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all sheet metal roofing work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Remove and legally dispose of off the project site existing "shingle roof" and "epdm" lined gutter and all flashings, including copper parapet coping.
2. Provide on pitched roof throughout, a composite nail base insulation as specified in Section 07 22 00.
3. Provide over nail base, a vapor retarder as specified in Section 07 22 00.
4. Provide self adhering membrane underlayment at all valleys, ridges, hips and like conditions as well at a 6 foot strip upslope at intersection with new gutter.
5. Provide a new metal roofing system for the entire building as shown on the drawings using the following -
   a. Design - standing seam.
   b. Material - .040 inch kynar finished aluminum
6. Provide "snow guards" for metal roofs with a Non-penetrating attachment system and Color-matched metal strips. Attachment system to provide attachment to standing seam metal roofs:
   a. With only minor dimpling of panel seams.
   b. Without penetrations through roof seams or panels.
   c. Without use of sealers or adhesives.
   d. Without voiding roof warranty.
7. Provide all required accessories, clips, formed closures and the like necessary to complete the work in a workmanlike and watertight manner to conform with the guarantee/warranty requirements contained herein.
8. Perform balance of metal roofing work, with suitable and compatible materials, as may be required to complete the work and to insure watertight construction.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 06 00 00 - Carpentry
B. 07 22 00 - Roof Insulation - Nail Base Type
C. 07 53 00 - Membrane Roofing (EPDM)
D. 07 60 00 - Flashing and Sheet Metal
E. 07 90 00 - Caulking and Sealing/Joint Sealants

F. 08 63 00 - Skylights, Metal Framed and Custom

1.04 QUALITY ASSURANCE

A. Application of overall metal roofing and fascia systems shall be coordinated with installation of roof insulation, metal and fabric flashings and all other similar items to provide a watertight installation.

B. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.

C. Manufacturer's Qualifications

1. The manufacturer shall have had at least (3) three years experience in architectural and industrial roofing systems.

D. Installer Qualifications

1. The installer shall have a minimum of 3 years experience of installation with structural field-formed concealed clip roofing systems.
2. Manufacturer must train and certify the installer so as to provide a single source responsibility for this portion of the work.
3. Furnish names of Owners and Architect/Engineer of buildings on which Applicator has installed satisfactory roof similar to type specified herein.

E. REFERENCE STANDARDS

1. AA - Aluminum Association
   "Specifications for Aluminum Sheet Metal Work in Building Construction"
   "Specifications for Aluminum Structures"
   "Standards and Data"
2. AISI - American Iron and Steel Institute - "Light Gauge Cold-Formed Steel Design Manual"
3. ASTM - American Society of Testing Materials
   A 446 - Structural, Physical Quality for Galvanized Steel Sheet
   A 525 - General Requirements for Galvanized Steel Sheet
   A 792 - General Requirements for Aluminum-Zinc Coated Sheet
   B 209 - Aluminum Alloy Sheet and Plate
   D 1056 - Flexible Cellular Materials
   E 330 - Structural Performance by Air Pressure Difference
4. NFPA - National Forest Products Association - "National Design Specifications for Stress Grade Lumber and its Fastenings"
5. NRCA - National Roofing Contractors Association - "The NRCA construction Details"
6. SMACNA - Sheet Metal and Air Conditioning Contractors National Association - "Architectural Sheet Metal Manual"
7. AWS - American Welding Society, Code for Arc and Gas Welding in Building Construction and Recommended Practice for the Spot Welding of Low Carbon Steel.

F. Snow Guard requirements.

1. Mockup: Minimum 8 feet long including snow guard attachment, cross members, and accessories. Approved mockup

may remain as part of the Work.

2. Factor of safety: Utilize a factor of safety of 2 to determine allowable loads from ultimate tested clamp tensile load values.

G. Submit written certification prepared and signed by a Professional Engineer, licensed in the jurisdiction where work is to be performed, verifying that metal roof and anchoring system design submitted in accordance with requirements of Paragraph 1.05 herein meets indicated loading requirements and codes of authorities having jurisdiction.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop drawings showing dimensions, layout, location and details of all shop and field splices and connections of members, including weld and connector sizes and spacings, and all loose, shop assembled or field connected members. Piece details shall show principal lines of all abutting or connecting members. Shop drawings shall show all bridging, bracing, accessories and anchorage details, and shall identify all materials.

B. Shop drawings showing arrangements of sheets and joints, types and locations of fasteners, special shapes, and other critical conditions.

C. Complete erection drawings referencing all items detailed at date of submission and identifying erection methods and sequence of operation.

D. The Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

E. Submit the following Test Reports, certified by and Independent Testing Laboratory or an independent professional engineer, to

verify that the proposed roofing will meet the performance requirements of this specification.

1. ASTM E 1592 "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference" test methods.
2. Halter/Clip Fastener Pull-Out Tests and Calculations.
3. UL 90 Classification Test Data and report number.
4. Concentrated Load Test Data
5. Air Infiltration (E 283) and Water Penetration (E 331) Test Results

F. Furnish certified laboratory test reports showing that the proposed system has been tested and conforms to applicable provisions specified herein.

G. Samples and descriptive data:

1. Roof panel: Full panel width, 12 inches long.
2. System Clips/Halters: Two Required.
3. Fasteners: Two of each type to be used with a statement identifying the intended use of each.
4. Closure: One metal and one neoprene.
5. Insulation: 12 inch square sample of specified thickness.
6. Sealants: One sample of each type and statement identifying the intended use of each.

H. Show pattern, finish, color and thickness.

I. Snow Guard Submittals

1. Shop Drawings: Show locations of snow guards on roof and attachment spacing.
2. Product Data: Include product description and installation instructions.
3. Samples including - Clamp samples; 24 inch long cross member samples including color-matched metal strip, splice connector, and other hardware.
4. Test results: Results of product tensile load testing, issued by a recognized independent testing laboratory, showing ultimate load-to-failure value of attachment.
5. Certification: Installer's certification that snow guard system was installed in accordance with manufacturer's instructions and approved Shop Drawings.

J. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of material shall be made only after suitable facilities for its storage and protection are available on the site.

B. Upon receipt of preformed metal panels, flat sheets, flashings and panel accessories; installer shall examine each shipment for damage and for completeness of the consignment.

C. Store materials out of the weather, in a clean, dry place. One end of each container should be slightly elevated to allow any moisture to run off.

D. Panels and/or flashings with strippable film must not be stored in areas exposed to sunlight.

E. Care should be taken to prevent contact with any substance which

may cause a discoloration in the finish during storage.

F. Store materials to provide ventilation and prevent bending, abrasion, or twisting.

1.07 PERFORMANCE

A. Uniform load capacity of system shall be determined by testing in accord with the principles of ASTM E 330 adapted to testing of formed sheet panels by additions to specific sections as follows:

(7.1) Roof test specimens shall represent the condition to be evaluated, free of undue influence of perimeter conditions. Panels shall be continuous over one or more interior supports and contain at least five panel widths for standing seam roofing.

(7.1.2) No roof attachments are permitted at the sides other than the standard gable or rake condition. For uplift tests, at least one end seal shall be flexible and in no way restrain the crosswise distortion of panels. Ends may simulate an eave condition if over 12 feet away from the mid-roof clip under evaluation.

(7.2.1) Roofing panels and accessories are to be production material of the same type and thickness proposed for use on the project.

(10.1.1) Longitudinal seals or plastic film shall not span any crevice or cracks that may tend to separate under pressure.

B. Design capacity for conditions of gauge, span or loading other than those tested may be determined by the interpolation of test results. Extrapolation outside the range of the tests is not acceptable.

C. Weathertightness - When tested in accord with the principles of NAAM TM-1, the roof system shall show no leakage when exposed to rainfall at 5 inches/hour and wind velocity up to 60 mph for five minutes.

D. The installation shall be designed to safely resist the positive and negative loads as specified below:

Roof covering away from edges	+ 60 psf
Roof ridges, eaves and rakes	+ 90 psf
Roof ends, eave and rake corner	+ 90 psf

E. Roof panel and flashing attachments shall be designed to accommodate the thermal expansion and contraction of the exterior material through a 200 degrees F temperature change.

F. Roof panels shall carry the uniform positive design loads stated herein with a maximum total panel deflection of L/140 as measured in the flat of the panel.

G. Further, all approved systems shall be designed to meet the minimum following criteria:

1. Snow loading provisions in accordance with New York City

Building Code.

2. Factory mutual uplift requirements - I-90

1.08 PROTECTION

A. Protect products and accessories against damage and discoloration.

B. Avoid overloading roof with stored materials.

C. Do not permit material storage or traffic on completed roof surfaces.

1.09 SPECIAL GUARANTEE/WARRANTY TERMS

A. In addition to the terms and conditions of the Guarantee/Warranty requirements of the General Conditions, the manufacturer shall guarantee all work of this Section against leaks and other defects which may result from faulty workmanship or materials for an extended 15 year period from the date of final acceptance of the Project.

B. Material Warranty: Provide warranty issued by manufacturer to cover roof panel base metal against rupture, structural failure, or perforation due to exposure to normal atmospheric corrosion for a period of 20 years.

1.10 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. The basic intent of this specification is to furnish a prefinished standing seam metal roofing, fascia and companion flashing and trim system using the following materials.

1. Prefinished aluminum, 0.040" in a field fabricated configuration for standing seam design for sloped roof and companion trim systems.

Finish of material shall be "Duranar XL" by PPG in color as

directed by the Commissioner and conforming to AAMA 605.2 for performance.

Finish shall be 0.90 dmt over 0.25 dmt primer. Bottom side shall be coated with a compatible primer to 0.25 dmt.

Provide strippable coating on top side to protect finish during fabrication, shipping and handling. Strip coating prior to installation.

Entire system shall be as fabricated by Merchant and Evans, Inc. under the trade name "Zip-Rib" or approved equal product by Atas, Berridge or Metal Sales.

2.02 MATERIALS - PANELS AND SHEET

A. Panels shall be fabricated in full lengths from ridge to eave without end laps or with end laps only as shown on the drawings.

B. Panels shall be 12 inches wide with concealed anchors that resist wind uplift yet permit expansion and contraction with temperature changes. Standing ribs 2-1/2 inches high shall have a continuous groove capillary break. Ribs shall be securely locked over anchor clips with a field operated roll-forming tool. Individual panels shall be removable for replacement of damaged material. Locate 2 intermediate stiffener ribs 3/8 inch high in the flat pan to minimize oil-canning and telegraphing of structural members.

2.03 MISCELLANEOUS ITEMS

A. Support channels, cleats, clips and accessories as may be required for "Zip-Rib" system shall be of standard manufacture suitable for intended installation.

1. Anchor clips with aluminum panels shall be series 300 non-magnetic stainless steel or aluminum coated with nylon or galvanized steel base to minimize wear from thermal movement.
2. Fasteners in supports and screws installed in clips shall be fully recessed so that no sharp edges come in contact with the roof material.
3. Clips shall be designed to allow for expansion and contraction to the roof relative to the structure throughout the temperature range of -20°F to +180°F

B. Screws holding anchor clips to the structure shall be stainless steel.

C. Exposed fasteners shall be stainless steel. Screws shall have separate washers with hot bonded neoprene faces, and pop-rivets shall be set in wet sealant. Exposed fasteners shall be a minimum #14 size screw or 3/16 inch diameter rivet.

D. Flashings, trim and accessories shall be custom formed using same material type and finish as the roof panel, but the temper may be reduced to facilitate forming. Minimum thickness shall be the same as the roof panel.

E. Sealants - Type IV as per Section 07 90 00.

F. Precut foam profile closures shall be black closed cell foam

meeting specification ASTM D 1056 grade SCE-41 Black EPT. Field fabricated hop closures shall be foam PVC supported and protected from weathering by a metal channel matching the roof flashing.

2.04 SNOW GUARDS

A. Contract Documents are based on S-5! ColorGard by Metal Roof Innovations, Ltd.

B. B. Clamps: Manufactured from 6061-T6 aluminum extrusions conforming to ASTM B221 or aluminum castings conforming to ASTM B85 and to AA Aluminum Standards and Data. Clamp model: No. S-5-U. Set screws: 300 Series stainless steel, 18-8 alloy, 3/8 inch diameter, with round nose point. Attachment bolts: 300 Series stainless steel, 18-8 alloy, 10 mm diameter, with flat washers.

C. Cross Members: Manufactured from 6061-T6 alloy and temper aluminum extrusions conforming to ASTM B221 and AA Aluminum Standards and Data. Receptacle in face to receive color-matched metal strips. Provide splice connectors ensuring alignment and structural continuity at end joints.

D. Color Strips: Same material and finish as roof panels; obtained from roof panel manufacturer.

E. Snow and Ice Clips: Aluminum, with rubber foot, minimum 3 inches wide.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 HANDLING

A. Care should be taken to avoid gouging, scratching or denting.

B. Do not allow traffic on completed roof. If required, provide cushioned walk boards.

C. Protect installed products form damage caused by foreign objects and adjacent construction until completion of project.

3.03 INSTALLATION

A. All work shall be installed in accordance with the approved shop details under direct supervision of an experienced sheet metal craftsman.

B. Attachments and joints shall allow for expansion and contraction from temperature changes without distortion or elongation of fastener holes.

C. Panels should be installed in such a manner that, horizontal lines are true and level, and vertical lines are plumb.

D. Panels are to be mechanically seamed after installation in the field.

E. Roof panels shall be continuous from eave to ridge provided panel length does not exceed 42 feet. If length is exceeded, splice

panels by lapping a minimum of 5 inches. These endlaps shall occur at solid blocking. Sealant shall be used in all roof panel endlaps. Fastener population and pattern for both wall and roof panels shall be as shown on erection drawings.

F. Flashing shall be installed in strict accordance with the recommended practice in the AA, NRCA and SMACNA architectural sheet metal manuals: without fasteners in end laps and isolated from dissimilar materials. All starter and edge flashings should be installed prior to panels.

G. Do not allow panels or trim to come into contact with dissimilar materials.

H. Completed work shall be plumb and true, free of scrapes and dents. Panel ribs shall be on the module indicated in the contract drawings within the tolerance allowed by the actual construction dimension.

3.04 SNOW GUARD INSTALLATION

A. Prior to beginning installation, verify that panel seaming is complete; panel attachment is sufficient to withstand loads applied by snow guard system. Installation will not impeded roof drainage.

B. Clean areas to receive attachments; remove loose and foreign matter that could interfere with installation or performance.

C. Install system in accordance with manufacturer's instructions and approved Shop Drawings.

D. Place clamps at maximum 32 inches on center or as required by in-service loads.

E. Place clamps in straight, aligned rows.

F. Place both set screws on same side of clamp.

G. Tighten set screws to manufacturer's recommended torque. Randomly test set screw torque using calibrated torque wrench.

H. Insert color-matched metal strips into cross members, staggering strips to cover cross member joints.

I. Attach cross members to clamps; tighten bolts to manufacturer's recommended torque.

J. Install splice connectors at cross member end joints.

K. Do not cantilever cross members more than 3 inches beyond last clamp at ends.

L. Install two SnoClips per panel between panel seams.

3.05 DAMAGED MATERIAL

A. Replace any materials or components that are damaged beyond repair prior to completion.

B. Each area will be wiped down as it is completed.

3.05 TOUCHUP

A. Only minor scratches and abrasions will be allowed to be touched up. Any other damaged material shall be replaced.

3.06 MISCELLANEOUS

A. The Contractor shall provide all caulking in conjunction with roofing and sheet metal where shown and/or required. Further, all

ribbed, roof panel sidelaps shall be sealed with a field applied, continuous ribbon of tape or mastic type sealant. All eaves shall be sealed.

B. Sealant shall be Type IV as/Section 07 90 00.

C. Items not covered elsewhere in this Section shall be as indicated on the drawings and/or as required to provide a complete weathertight installation. Formed metal work shall accurately reproduce the detail and design shown, and profiles, bends and intersections shall be sharp, true and even. Joints shall be lapped or locked and soldered as applicable. Preformed units shall have surface applied battens.

3.07 CLEANING

A. All metal remaining exposed shall be free from any stains or blemishes, prefinished material shall be touchup as applicable, and shall be cleaned of all foreign substances after roofing is complete. All surfaces shall be left clean and satisfactory to Commissioner. Exposed surfaces of the building or components thereof, whether installed under this trade section or not, and which have been soiled or damaged under this section shall be cleaned and repaired at no cost to the City of New York.

3.08 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 07 81 00

FIREPROOFING

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all restoration of all existing fireproofing work as well as new applications as required to maintain fire ratings of the existing structure as required by the schedules, keynotes and drawings.

1. Provide, and maintain as part of the requirements of the execution of the work of this Section, all scaffold and staging necessary and required to complete the work of this section.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 05 12 00 - Structural Steel and Structural Steel Repairs

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.

B. All materials used in the work of this Section shall be FORMULATED WITHOUT ASBESTOS AND SHALL BE SO CERTIFIED BY THE CONTRACTOR in accordance with OSHA 29 C.F.R. Section 1926.58.

C. Qualifications

1. Product Qualifications: The manufacturer of the material shall have Underwriter's Laboratories Inc. approval for the fireproofing ratings and applications specified.

2. Contractor's Qualifications: The Contractor shall be licensed for this type of work by the manufacturer of the fireproofing materials. He shall use materials and application equipment approved by this manufacturer.

D. Coordination

1. Cooperate and work in harmony with firms doing the work of all other sections, allow them access to the work under this section and afford them all reasonable opportunity for the installation of their work and the storage of their materials.

2. Arrange and carry on work of this section in such a manner as not to unnecessarily delay or hinder the work of any other section.

E. All surfaces scheduled and/or required to receive spray-on fireproofing shall be clean and free of dirt, grease, oil, loose plaster, rust scale, loose paint, or other conditions which would

impair good adhesion.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Schedule of thickness for intended material.
B. Certification of Specification Compliance.
C. Materials proposed for use in fireproofing along with test data showing conformance to minimum property standards set forth in Part 2 herein.
D. Test Data: Independent laboratory test results for fireproofing shall be submitted for the following performance criteria:
    1. Bond Strength per ASTM E 736
    2. Compressive Strength per ASTM E 761
    3. Deflection per ASTM E 759
    4. Bond Impact per ASTM E 760
    5. Air Erosion per ASTM E 859
    6. Corrosion Resistance per ASTM E 937
    7. Abrasion Resistance (Test Method developed by City of San Francisco, Bureau of Building Inspection)
    8. Impact Penetration (Test Method developed by City of San Francisco, Bureau of Building Inspection)
    9. High Speed Air Erosion per ASTM E859
    10. Surface Burning Characteristics per ASTM E 84
    11. Combustibility per ASTM E 1354 Cone Calorimeter
    12. Mold Resistance per ASTM G 21
E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Fireproofing materials shall be delivered to the project site in sealed paper bags, or other suitable containers, properly identified and labeled so as to indicate approval of materials by the Underwriters' Laboratory under procedures of ASTM E 119.

B. Storage shall be as required by the manufacturer above ground, under cover and in a dry location until ready for use. All bags that have been exposed to water before use shall be found unsuitable for use and disposed of off the project site. Stock of material shall be rotated and used prior to its expiration date.

1.07 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):
   1. ASTM E 84 Surface Burning Characteristics
   2. ASTM E 119 Standard Methods of Fire Tests of Building Construction and Materials
   3. ASTM E 605 Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members
   4. ASTM E 736 Cohesion/Adhesion of Sprayed Fire-Resistive Material Applied to Structural Members
   5. ASTM E 759 Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members
   6. ASTM E 760 Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members
   7. ASTM E 761 Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members
   8. ASTM E 859 Air Erosion of Sprayed Fire-Resistive Material Applied to Structural Members
   9. ASTM E 937 Corrosion of Steel by Sprayed Fire-Resistive Material Applied to Structural Members
   10. ASTM E 1354 Cone Calorimeter
   11. ASTM G 21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

B. Bureau of Building Inspection: City of San Francisco
   1. Abrasion Resistance Test Method
   2. Impact Penetration Test Method

C. Underwriters Laboratories Inc. (UL) Fire Resistance Directory (Latest Edition)

D. International Building Code (IBC) - Section 720

E. Associated Wall and Ceiling Institute (AWCI)
   1. AWCI Technical Manual 12-A: Standard Practice for the Testing and Inspection of Spray Applied Fire-Resistive Materials
   2. AWCI Technical Manual 12: Design Selection Utilizing Spray Applied Fire-Resistive Materials

1.08 ENVIRONMENTAL/PROJECT SITE CONDITIONS

A. Care shall be exercised in the application of the fireproofing material so as not to endanger the environment.

B. Maintain a minimum temperature of 40 degrees F (4.4 degrees C) for air and substrate for 24 hours before, during and after application of system.

C. Material shall be allowed to dry during and subsequent to its application. Material shall be substantially dry within 30 days after application.

1.09 MOCKUP

A. Before proceeding with the work, the applicator shall apply the fire protection material to a section of approximately 100 square

feet (9.3 square meters) area. This section shall be witnessed by the Commissioner's and shall be subject to their approval to be used as a guide for texture and thickness of the finished work.

1.10 TESTING AND INSPECTION/FIELD QUALITY CONTROL

A. Provide facilities for Commissioner to inspect work for uniformity and adequacy after installation.

B. The Commissioner shall select, and the City of New York will pay an independent testing laboratory to sample and verify the thickness and density of the fireproofing in accordance with the provisions of ASTM E 605.

C. The spray-applied fire resistive material shall be tested for thickness and density in accordance with one of the following procedures:

1. ASTM E 605 - Standard Test Method for Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members.
2. AWCI - Inspection Procedure for Field-Applied Sprayed Fire-Resistive Materials, Technical Manual 12-A; an annotated guide.
3. ICBO, Section 720 - Thickness and Density Determination for Spray-Applied Fire Protection.

1.11 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 EXTERIOR/WEATHER RESISTANT MATERIAL - HARD COAT

A. Material shall be one of the following or an approved equal

1. The Construction Products Division of W. R. Grace and Company or its processing distributors. (Zonolite Type 146)
2. Pyrok Incorporate (HD)
3. Isolatek (Fendolite M-11)

B. MATERIAL CRITERIA - Materials proposed for work of this Project shall meet the following minimum performance criteria -

1. Material shall conform to the requirements for corrosion

prevention to eliminate the necessity for steel painting in field in conformance with ASTM E 937; certification of this is required from this Contractor.

2. Oven Dry Density - ASTM E 605, minimum 40 pcf.
3. Deflection - Material shall not crack or delaminate under ASTM E 759.
4. Bond Impact - Material shall not crack or delaminate under ASTM E 760.
5. Bond strength on uncoated or galvanized material, minimum average 10,000 psf and a minimum individual bond strength of 8,000 psf each as per ASTM E 736.
6. Air Erosion - Loss from finished application by sifting, flaking or dusting with maximum allowable weight loss of 0.005 grams/sq.ft. as per ASTM E 859.
7. Compressive Strength - Deformation of not more than 10% when subjected to compressive forces of 80,000 psf as per ASTM E 761.
8. Abrasion Resistance and Impact Penetration shall be measured as established by recognized testing agencies under conditions set by the San Francisco Bureau of Building Inspection and required by NAVFAC.
9. Surface Burning Characteristics - ASTM E 84; 0/0.
10. Durometer Hardness - ASTM D 2240, minimum 35.
11. Resistance to Mold Growth - ASTM G 21 with inhibitor added.

NOTE: If adhesive or primer is required for any proposed system, same shall be furnished and installed in accordance with the manufacturers directions at no additional cost to the City of New York.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

B. Application shall be started only after the Contractor is satisfied that surface and temperature conditions are acceptable.

3.02 INSTALLATION

A. All fireproofing application shall be with manufacturer approved equipment and either by a licensed applicator under the direction of the manufacturer or by the manufacturer of the material directly.

All systems shall be applied to the required thicknesses for ratings required notwithstanding dimensions, if any, shown on the drawings. A schedule of required thicknesses for intended material shall be submitted as per Paragraph 1.05 above.

B. All clips, hangers, clamps, supports, sleeves and other attachments

to the base surfaces, as covered by other sections of these specifications, shall be placed by other sections prior to commencement of work covered by this section.

C. Should clips, hangers, clamps, and the like be installed after fireproofing work is done, fireproofing work must be removed and all such devices must be fastened to the base surface. Fireproofing shall then be replaced by the original applicator.

3.03 CLEANING, PROTECTION AND ADJUSTMENT

A. The work area shall be maintained in an orderly condition.

B. After the completion of work, equipment shall be removed and all surfaces not to be sprayed shall be cleaned.

C. Protect all new and existing construction, adjacent work and finished work from and damage.

D. Upon completion of installation, all excess material, overspray, dropping and debris shall be cleared and removed from the job site.

E. All patching of and repair to fire protection material, due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage. The coordination of this requirement is the responsibility of the General Contractor or Construction Manager; no additional cost shall be incurred by the City of New York.

F. Damage caused by the handling, storing or application of materials or the failure to provide adequate protection shall be repaired or replaced at no additional cost to the City of New York.

3.04 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 07 84 00

FIRESTOPPING

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all firestopping and smoke seal work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

NOTE: Firestopping is defined as a material, or combination of materials, to restore the integrity of fire rated walls and floors by maintaining an effective barrier against the spread of flame, smoke and toxic gases and further defined in 1.04 below.

1. Provide firestopping and smoke seals as indicated on the drawings and/or required to maintain full and continuous smoke and fire barrier between zones including:
   a. Through penetration firestops and smoke-stops for all fire-rated bearing and non-bearing wall and floor assemblies, both blank (empty) and those accommodating penetrating items such as cables, conduits, pipes, ducts, etc. .
   b. Membrane penetration protection for fire-rated walls.
   c. Architectural/Construction joint firestops within walls, floors, or the intersection of floors to exterior walls, or the intersection of top of walls to ceilings.
   d. Top of wall firestopping in all fire-rated partitions with either mineral wool specified herein or fire-rated gaskets as specified in Section 09 29 00.
   e. Top of wall and construction joint smoke-stopping in all smoke partitions.
   f. Work further includes any and all draftstop/acoustic stop annular packing for all partitions both rated and non-rated.

Cope and seal around all structural elements to insure smoke and fire barriers.

IT IS A MANDATE OF THIS CONTRACT THAT ALL FIRESTOPPING WORK BE ACCOMPLISHED BY A FM4991 ACCREDITED CONTRACTOR WITH AT LEAST ONE "Designated Responsible Individual (DRI)" IN THE EMPLOY OF THE SPECIALTY CONTRACTOR FIRM. A COPY OF THE QUALITY ASSURANCE MANUAL SHALL BE MAINTAINED ON THE JOB SITE FOR REVIEW BY THE DESIGN PROFESSIONAL, CONTRACTOR AND ANY OTHER INTERESTED PARTY.

NOTE: A preinstallation conference shall be scheduled by the Contractor with this Specialty Contractor and all other Specialty Contractors, Subcontractors and the like to establish procedures to maintain optimum working conditions and to coordinate the work of this Section with related and adjacent work.

2. Provide "mice blocking" at all new vertical and horizontal penetrations, and at all existing penetrations which are exposed during the course of demolition and new construction.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

NOTE: Proper execution of this work will maintain the hourly ratings of the walls and floors and ensure progress of work in other Sections as listed below:

A. Division 21 - Fire Protection
B. Division 22 - Plumbing
C. Division 23 - HVAC
D. Division 26 - Electrical Work
E. Division 28 - Electronic Safety and Security

1.04 QUALITY ASSURANCE

A. Firestopping systems (materials and design):
   1. Shall conform to both Flame (F) and Temperature (T) ratings as required by local building codes and as tested by nationally accepted test agencies per ASTM E 814 or UL 1479 fire tests in a configuration that is representative of field conditions.
   2. The F rating must be a minimum of 1 hour but not less than the fire resistance rating of the assembly being penetrated.
   3. T rating when required by code authority shall be based on measurement of the temperature rise on penetrating item(s).
   4. The fire test shall be conducted with a minimum positive pressure differential of 0.03 inches of water column.
   5. For joints, must be tested to UL 2079 or E 1399 and E 1966 with movement capabilities equal to those of the anticipated conditions.
   6. Where there is no specific third party tested and classified firestop system available for a particular firestop configuration, the firestopping contractor shall obtain from the firestop manufacturer an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFFRA) for submittal.

B. Firestopping materials and systems must be capable of closing or filling through-openings created by 1) the burning or melting of combustible pipes, cable jacketing, or pipe insulation materials, or 2) deflection of sheet metal due to thermal expansion (electrical and mechanical duct work).

C. Firestopping sealants must be flexible, allowing for normal pipe movement.

D. Firestopping materials shall not shrink upon drying as evidenced by cracking or pulling back from contact surfaces.

E. Firestopping materials shall be moisture resistant, and may not dissolve in water after curing.

F. For firestopping exposed to view, traffic, moisture, and physical damage, provide appropriate firestop systems for these conditions.

G. All firestopping materials shall be manufactured by one manufacturer (to the maximum extent possible).

H. Material used shall be in accordance with the manufacturer's written installation instructions.

I. Firestopping shall be performed by a Specialty Contractor trained or approved, in writing, by firestop material manufacturer. Said specialist shall be as defined in the Conditions. Equipment used shall be in accordance with firestop material manufacturer's written installation instructions.

J. Materials shall conform to all applicable governing codes.

K. All materials used in the work shall be certified "asbestos free" and shall be free from any and all solvents or components that require hazardous waste disposal or, that after curing, dissolve in water.

L. All materials shall comply with the interior finish flame spread and smoke developed requirements for the area in which they are installed. Coordinate with governing codes.

M. DEFINITIONS

1. FIRESTOPPING: The use of a material or combination of materials in a fire-rated structure (wall or floor) where it has been breached, so as to restore the integrity of the fire rating on that wall or floor.
2. SYSTEM: The use of a specific firestop material or combination of materials in conjunction with a specific wall or floor construction type and a specific penetrant(s), constitutes a "System"
3. BARRIER: Any bearing or non-bearing wall or floor that has an hourly fire and smoke rating.
4. THROUGH-PENETRATION: Any penetration of a fire-rated wall or floor that completely breaches the barrier.
5. MEMBRANE-PENETRATION: Any penetration in a fire-rated wall that breaches only one side of the barrier.
6. CONSTRUCTION GAPS: Any gap, joint, or opening, whether static or dynamic, where the top of a wall may meet a floor; wall to wall applications; edge to edge floor configurations; floor to exterior wall; or any linear breach in a rated barrier. Where movement is required, the firestopping system must comply with UL2079 for dynamic joints.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any

or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

NOTE: A "Certificate of Conformance", from the manufacturer listed in Part 2, is required with the "Submittal Package" to ensure that the material selected meets all of the criteria of this specification as set forth in Paragraph 1.04 of this Section.

A. Submit manufacturer's product literature for each type of firestop material to be installed. Literature shall indicate product characteristics, typical uses, performance and limitation criteria, and test data.

B. UL Tested Systems: Submit drawings showing typical installation details for the methods of installation. Indicate which firestop materials will be used and thickness for different hourly ratings.

C. Engineering Judgments: Submit manufacturer's drawings for all non-standard applications where no UL tested system exists. All drawings must indicate the "Tested" UL system upon which the judgment is based so as to assess the relevance of the judgment to some known performance.

D. Submit manufacturer's installation procedures for each type of product.

E. Approved Applicator: Submit document from manufacturer wherein manufacturer recognizes the installer as qualified or submit a list of past projects to demonstrate capability to perform intended work.

F. Upon completion, installer shall provide written certification that materials were installed in accordance with the manufacturer's installation instructions and details.

G. Mockups:

1. Prepare job mockup of the material proposed for use in the project as directed by Commissioner. Approved mockups shall be left in place as part of the finished project and will constitute the standard for remaining work, including aesthetics.

H. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver all materials to be used in the work of this section to the project site in original sealed containers with manufacturer's brand and name, lot numbers, UL labeling, mixing and installation instructions clearly identified thereon.

B. Store all materials in accordance with manufacturer's directions. All materials shall be dated with shelf life and shall be removed from the project site at the contractors expense if date is expired.

1.07 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. E 814 - Standard Method of Fire Tests of Through Penetration Fire Stops.
2. E 119 - Methods of Fire Tests of Building Construction and Materials.
3. E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
4. E 136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750F
5. E 1399 Cyclic Movement and Measuring Minimum and Maximum Joint Widths
6. E 1966 - Test Method for Resistance of Building Joint
7. E 2174 - Standard Practice for On-Site Inspection of Installed Fire Stops
8. E 05.11.14 - Standard Test Method for Determining the Fire Endurance of Perimeter Fire Barrier Systems Using the Intermediate-Scale, Multi Story Test Apparatus (ISMA); ASTM permanent number assignment pending approval of Draft

B. Underwriters Laboratories, Inc. (UL)

1. UL 1479 - Fire Tests of Through Penetration Fire Stops.
2. UL 263 - Fire Tests of Building Construction and Materials.
3. UL 723 - Surface Burning Characteristics of Building Materials.
4. UL 2079 Tests for Fire Resistance of Building Joint Systems
5. UL "Fire Resistance Directory", current year, including but not limited to the following:
   a. For penetrations by uninsulated, non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT) - UL System: CAJ1235, CAJ1404, WL1152.
   b. For penetrations by insulated, non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT) - UL System: CAJ5222, CAJ5250, CAJ5251, WL5171.
   c. For penetrations by PVC jacketed, flexible cable or cable bundles and plastic pipe (closed piping systems) - UL System: CAJ2401, CAJ3185, CAJ3199, CAJ3234, WL3118, WL3179, WL3199.
   d. For penetrations by combustible plastic pipe (open piping systems) - UL System: CAJ2174, CAJ2339, CAJ2351, CAJ2432, WL2168, WL2170, WL2185, WL2259.

e. For penetrations by multiple combustible and/or non-combustible items - UL System: CAJ8101, CAJ8133, WL8007.

f. For large size/complex penetrations made to accommodate cable trays, multiple steel and copper pipes, electrical busways in raceways - UL System: CAJ1406, CAJ1502, CAJ4053, CAJ6027, WJ6004, WL1207, WL1343 WL4030, WL6018.

g. For penetrations by steel ducts - UL System: CAJ7075, CAJ7082, WJ7045, WJ7046, WL7006, WL7046, WL7081, WL7082.

h. For fire-rated construction joints and other gaps - OPL System: CEJ296P, CEJ302P.

6. For openings between structurally separate sections of wall and floors. At the top of walls - UL System: HWD0107, HWD0110, HWD0257, HWD0267, HWD0299, HWD0327, HWD0266, HWD0333, HWD0334.

C. Factory Mutual (FM) Approval Guide, current year.
1. FM Approval Standard of Firestop Contractors - Class 4991

D. Building code of the jurisdiction of the Work.

E. National Fire Protection Association
1. NFPA 101 - Life Safety Code.
2. NFPA 70 - National Electrical Code.
3. NFPA 221 - Fire Walls and Fire Barriers (preliminary to be released)
4. NFPA 251 - Fire Tests of Building Construction and Materials

F. FICA "Manual of Practice"

G. International Firestop Council (IFC):
1. Ref. 1 Recommended IFC Guidelines for Evaluating Firestop Engineering Judgments (April 2001)
2. Ref. 2 Inspectors Field Pocket Guide

1.08 PROJECT CONDITIONS

A. Conform to manufacturer's printed instructions for installation and when applicable, curing in accordance with temperature and humidity. Conform to ventilation and safety requirements.

B. Coordinate work required with work of other trades; firestopping shall, **where practical,** precede gypsum board or other applied sheet finishing operations.

C. Where firestopping is installed at locations which will remain exposed in the finished work, provide protection as necessary to prevent damage to adjacent surfaces and finishes, and protect as required against damage from other construction operations.

1.09 SEQUENCING

A. Schedule firestopping after installation of penetrants but prior to concealing the openings.

B. Firestopping shall precede gypsum board finishing.

1.10 PROTECTION

A. A Where firestopping is installed at locations which will remain exposed in the completed work, provide protection as necessary to

prevent damage to adjacent surfaces and finishes, and protect as necessary against damage from other construction activities.

1.11 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.
   2. Water-soluble.
   3. Can be cleaned up with water.
   4. Non-flammable.
   5. Biodegradable.
   6. Low or preferably no Volatile Organic Compound (VOC) content.
   7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
   8. Manufactured without compounds that contribute to smog in the lower atmosphere.
   9. Do not contain methylene-chloride.
   10. Do not contain chlorinated hydrocarbons.
   11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. Firestopping materials and systems shall meet the requirements specified herein.

B. Commissioner must approve in writing any alternates to the materials and systems specified herein.

C. All firestop products and systems shall be designed and installed so that the basic sealing system will allow the full restoration of the thermal and fire resistance properties of the barrier being penetrated with minimal repair if penetrants are subsequently removed.

D. For applications where combustible penetrants are involved, i.e.. insulated and plastic pipe, a suitable intumescent material must be used.

2.02 SPECIFICATION STANDARD: For purposes of establishing standards of quality and levels of performance and not for the purposes of limiting competition, the basis of this specification is upon units as manufactured by one of the following and their respective model suitable for the intended application.

A. Hilti, Inc.
B. Specified Technologies, Inc.
C. Grace/IPC Corp.
D. Nelson Firestop Products
E. Tremco, Inc.
F. U.S. Gypsum Company
G. Johns Manville

2.03 PRODUCTS SHALL GENERALLY INCLUDE

A. Cast-In-sleeves (3M CID)
B. Mortar seals

C. Fire stop design sealant compounds, caulk and foam systems.
D. Putty and putty pads
E. Firestop kits including collars, plugs, etc.
F. Seal bags
G. Tapes and blankets
H. Intumescent design wrap strips
I. Mineral type unfaced safing insulation with third party wrap, 3.5 pcf density, UL R-10905 label.
J. Top of Wall Mineral Wool Strips or Plugs (Hilti CP 767/777).

2.04 ACCESSORY ELEMENTS
A. Forming, damming materials shall be mineral fiber board or other suitable material recommended by nominated system manufacturer.
B. Primers, sealant and solvent cleaners shall be as recommended by the nominated system manufacturer.
C. Metal Systems - 20 gauge phosphatized, electrogalvanized steel plate and/or galvanized steel clips.

2.05 MICE BLOCKING
A. "Stuff Fit" copper mesh crack and crevice seal by Allen Special Products or approved equal.

2.06 Balance of materials shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE
A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.
B. Verify that environmental conditions are safe and suitable for installation of firestop products.
C. Verify that all pipe, conduit, cable, and other items which penetrate fire-rated construction have been permanently installed prior to installation of firestops.

3.02 PREPARATION
A. The surface shall be dry, clean, and free of all foreign matter. Do not apply firestopping to surfaces previously painted or treated with a sealer, curing compound, water repellant or other coatings unless tests have been performed to ensure compatibility of materials.
B. Provide primers as required which conform to manufacturer's recommendations for various substrates and conditions.
C. Mask where necessary to protect adjoining surfaces.
D. Remove excess material and stains on surfaces as required.

3.03 INSTALLATION - GENERAL SYSTEMS
A. Install in strict accordance with manufacturer's printed instructions as well as U.L guidelines and state and local fire codes..

B. Ensure that anchoring devices, backup materials, clips, sleeves, supports and other materials used in the actual fire test are installed.

C. Install firestopping with sufficient pressure to properly fill and seal openings to ensure an effective smoke seal.

D. Tool or trowel exposed surfaces. Remove excess firestop material promptly as work progresses and upon completion.

E. Install dams when required to properly contain firestopping materials within openings and as required to achieve required fire resistance ratings. Combustible damming materials must be removed after appropriate curing. Incombustible damming materials may be left as a permanent component of the firestopping system.

3.04 FIRESTOPPING CONSTRUCTION AT BUILDING EXTERIOR PERIMETERS, INTERIOR WALLS, SHAFTS, ETC.

A. Install material of proper size on continuous plates or clips as required for proper support in order to safe-off area between exterior walls, interior walls and shafts and floor slabs and said walls and roof areas leaving NO VOIDS.

B. Firestopping is required at all juncture conditions whether or not clips, angles or other structural elements exist either intermittently or continuously. Attach plates and/or clips to floor levels and other breaks and extend through framing to sheathing and/or other solid strata. Where metal decking flutes, either parallel or perpendicular to walls, occur and are open, same shall be fully packed and sealed with proper firestopping system.

C. Where firestopping is accomplished after installation of drywall or other applied sheet finish, all spaces between penetrations and finish shall be filled to the thickness of said sheet finish with intumescent caulk.

D. At all linear openings, fill voids with a minimum of 6 inches of minimum 3.5 lb./cu.ft. density safing insulation as specified in Part 2 herein and cover entire surface with UL listed firestop sealant of one of nominated manufacturers identified in Part 2 herein.

3.05 PENETRATION SEALS

A. Penetrations are defined as conduits, cables, wires, piping, ducts or other elements passing through one or both outer surfaces of fire rated walls, floors or partitions and shall be firestopped on both sides of penetration in accordance with requirements set forth in Paragraph 1.04 of this Section.

B. Where sleeves are used, same shall be as specified in Part 2 herein; in event that sleeves are not used, core openings and caulk or wrap penetrating items with intumescent system the full length of penetration and seal on both sides with intumescent caulk.

C. Residual openings within square or rectangular holes shall be filled with compounds applicable for substrate encountered and all penetrations sealed on both sides with caulk.

3.06 MICE BLOCKING

A. At fire rated penetrations and at penetrations in finish areas, install copper mesh prior to filling or sealing the penetration.

3.07 FIELD QUALITY CONTROL

A. Contractor shall immediately notify the Commissioner if the firestopping systems herein specified cannot meet the requirements of the specification.

B. Contractor shall examine firestops to ensure proper installation and full compliance with this specification.

C. All areas of work must be accessible until inspection by the applicable Code authorities.

D. Correct unacceptable firestops and provide additional inspection to verify compliance with this specification at no additional cost.

3.08 IDENTIFICATION

A. Identify firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:

1. The words: "Warning--Firestop System--Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Firestop system manufacturer's name.
6. Installer's name.

3.09 CLEANING

A. When finished work will be visible, clean adjacent surfaces in accordance with manufacturer's printed instructions.

B. If visible in the finished work, remove temporary dams after initial cure of firestops.

C. Correct staining and discoloring on adjacent surfaces.

D. Remove all debris and excess materials entirely from site and leave work in a neat and clean condition.

3.10 FIRESTOP SYSTEM SCHEDULE

A. The following schedules shall be completed by the Contractor and reviewed prior to submission to the Commissioner. The untitled table included shall be completed with each of the following categories of penetrating items.

1. Single uninsulated metallic piping and conduit.
2. Multiple uninsulated metallic piping and conduit.
3. Uninsulated plastic piping and conduit.
4. Insulated metallic piping.
5. Insulated high temperature flues and exhaust pipes (boiler flues, generator exhausts insulated with calcium silicate or other non-combustible insulation).
6. Cable tray.
7. Electrical/telephone cable.
8. Bus duct.
9. Miscellaneous penetrations.

B. Complete the additional tables for the following using the format provided.
   1. Blanks, voids, holes.
   2. Engineering judgments.
   3. Fire rated/resistant joints.
   4. Ductwork engineering judgments.

3.11 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

PENETRATING ITEM:

Manufacturer/Product Name:
Color:
Accessories:

Floor/wall Construction	Item Size/Description	Sleeve	F Rating	T Rating	Annular Space	Firestop Thickness	Tested Ass'y No.

BLANKS, VOIDS, HOLES

Manufacturer/Product Name:
Color:
Accessories:

Floor/wall Construction	Size/Description	F Rating	T Rating	Firestop Thickness	Tested Ass'y No.

ENGINEERING JUDGMENTS (Submit Actual Installation Drawing and Letter of Certification)

Manufacturer/Product Name:
Color:
Accessories:

Floor/wall Construction	Item Size/Description	F Rating	T Rating	Annular Space	Firestop Thickness	Packing Thickness

FIRE RATED/RESISTANT JOINTS

Manufacturer/Product Name:
Color:
Accessories:

Joint Description	F Rating	T Rating	Firestop Thickness	Tested Ass'y No.

DUCTWORK ENGINEERING JUDGMENTS

(Submit Actual Installation Drawing and Letter of Certification)

Manufacturer/Product Name:
Color:
Accessories:

Wall/Fl Const.	Size	Fire Damper	F	T	Annular Space Range	Firestop Thickness	Packing Thickness

End of Section

SECTION 07 90 00

CAULKING AND SEALING/JOINT SEALANTS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all caulking and sealing work for this project as required by the schedules, keynotes and drawings to complete the restoration and reconstruction of this project, including, but not limited to the following:

NOTE 1: It is the intention of these documents to require the removal of all existing caulking, backer rods and like fillers in any location where new sealant/caulking systems are required. Coordinate removal work with Sections 02 41 00 and 04 01 00.

NOTE 2: It will be the responsibility of the nominated supplier/suppliers of any sealant system proposed for use in the work to perform a "bond" test on all substrates to determine adhesion properties and requirement, if any, for primer application; coordinate with Article 1.05 herein.

1. Brick to Stone
2. Stone to Windows
3. Brick to Cast Iron
4. Stone to Cast Iron
5. Stone or Brick to exterior doors
6. Horizontal Sealant of Paving to Building
7. Interior Sealants in connection interior alterations.

Door frames -	VI
Window surrounds -	VI
Plumbing fixtures -	II
Sound integrity -	VI, Exposed; V, Concealed
Water penetration -	II
Light seals -	VI
Mill & counter work -	VI, Dry; II for Wet

NOTE: Sealants are generally required at the following locations -

a. Interior door frames to surrounding face construction;
b. Interior window trim/reveals to window frames;
c. Plumbing fixtures and accessories where same abut finished surfaces;
d. Scribed counter and casework systems where same abut finished surfaces;
e. Where gypsum wall board is in contact with concrete

slabs, walls and columns (tops, bottoms and sides)

f. Where concrete block is in contact with concrete slabs, walls and columns (tops, bottoms and sides)

g. At fire rated gypsum partition systems (coordinate with Section 09 29 00)

and like locations where dissimilar materials abut each other in finished areas.

8. Bed door saddles - Type VI

9. Perform balance of caulking and sealing as may be necessary and/or required to insure conformance to guarantee/warranty provisions contained herein.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above.

1.04 QUALITY ASSURANCE

A. Bond testing shall be performed as noted in Paragraph 1.02.A above and results submitted to Commissioner for file.

B. All surfaces to receive sealant shall be dry and cleaned of all foreign matter as specified in Part 3.

C. Application devices shall have nozzles of proper size and shall provide sufficient pressure to completely fill joints as detailed.

D. Consult sealant manufacturer for recommendations for application of sealant when air temperature is below 40°F. Provide written recommendation to Commissioner prior to application.

E. Sealants shall comply with VOC requirements of the Jurisdiction of the Work, or in absence of said regulation, all material shall comply with the following as applicable for particular application and shall **not** contain or be formulated with aromatic solvents, halogenated solvents, fibrous talc or asbestos, formaldehyde, mercury, lead, cadmium, hexavalent chromium or their derivatives.

F. Reference Standards

1. ASTM C 719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
2. ASTM C 794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
3. ASTM C 834 - Latex Sealing Compounds
4. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications.
5. ASTM C 920 - Elastomeric Joint Sealants.
6. ASTM C 1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
7. ASTM C 1193 - Standard Guide for Use of Joint Sealants.
8. ASTM C 1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants.
9. ASTM C 1311 - Solvent Release Sealants.
10. ASTM C 1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

11. ASTM C 1401 - Standard Guide for Structural Sealant Glazing
12. ASTM C 1481 - Standard Guide for Use of Joint Sealants with Exterior Insulation and Finish Systems (EFIS)
13. ASTM D 1056 - Flexible Cellular Materials, Sponge or Expanded Rubber.
14. SWRI (Sealant, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop Drawings: Submit details to show installation and interface between sealants and adjacent work.
B. Product Data indicating for each type of sealant and component used in this work - chemical characteristics; performance criteria; substrate preparation; limitations; color availability; and the like affecting the use of each product.
C. Samples of all components to be used in the work of this section.
D. Color charts for selection.
E. Schedule of sealant locations.
F. Test Reports:
    1. Submit results of laboratory pre-construction testing.
    2. Submit results of field pre-construction testing.
    3. Submit manufacturer's recommendations for joint preparation, priming, and joint accessory materials based on test results.
    4. Submit manufacturer's recommended installation procedure modifications resulting from field adhesion tests.
G. Manufacturer's installation instructions indicating, if any, special procedures; surface preparation; perimeter conditions requiring special attention; and like items affecting installation of each product. ***Results of bond tests shall be incorporated in installation recommendations.***

H. Certification of specification compliance.
   1. Certify products are suitable for intended use and products meet or exceed specified requirements.
   2. Certify applicator is approved by manufacturer.

I. Qualifications Data: Submit applicator's qualifications, including reference projects of similar scope and complexity, with current phone numbers and contact names of architects and owners for verification.

J. Manufacturer's Field Reports:
   1. Indicate time present at project site.
   2. Include observations, indicate compliance with manufacturer's installation instructions, and supplemental instructions provided to installers.

K. Material Safety Data Sheet (MSDS) must be submitted for each product.

L. Operation and Maintenance Data:
   1. Submit recommended inspection intervals.
   2. Submit instructions for repairing and replacing failed sealant joints.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product.

B. Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight in strict accordance with manufacturer's recommendations.

C. Condition products to approximately 60 to 70 degrees F (16 to 21 degrees C) for use in accordance with manufacturer's recommendations.

D. Handle all products with appropriate precautions and care as stated on Material Safety Data Sheet.

1.07 QUALITY CONTROL

A. Preconstruction Sealant Tests for Adhesion and Compatibility: Submit sealant samples for each material to be sealed in the work including, but not limited to metal flashing, painted wood at windows, glazing gaskets, glazing materials, framing members, masonry and stone of each type used, and all other components and accessories, to sealant manufacturer to verify sealant compatibility and to determine, by testing in compliance with ASTM C 794, as well as the type of primer required for each condition to ensure sealant adhesion to substrates.
   1. Cost of Testing: The sealant manufacturers shall perform and/or the Contractor shall, at his own expense employ an independent testing agent acceptable to the Commissioner to perform tests and certifications indicated. No costs shall be passed to the City of New York.
   2. Test Samples: Submit to the testing agency or sealant manufacturer at least 5 pieces of each type, finish, kind, condition, and form of material to which sealant is to be attached.

3. Scheduling: Scheduling sufficient time for testing, analysis, and reporting of results.
4. Test Reports and Recommendations: Obtain written reports and recommendations regarding proper sealant material, primer, and application for each condition. Use sealants and substrates only in combinations for which favorable adhesion and compatibility results have been obtained.

B. Construction Sealant Adhesion Tests shall be performed as specified under "Field Quality Control" in Part 3 of this Section.

1.08 MOCKUP REQUIREMENTS

A. Construct, in consort with other elements of the work, a sample mockup (s) of joint sealant surrounds; expansion/control joint sealant system and such other work, both interior and exterior as required by the Commissioner.
B. Mockups shall show sealant types, colors and tooled (finished) surfaces.
C. Where practical, mockups shall remain as part of the finished work.

1.09 SPECIAL GUARANTEE/WARRANTY TERMS

A. This Contractor shall, and hereby does warrant; and the Contractor shall, and hereby does guarantee that caulking and sealing work will be free from defects of materials and workmanship for 2 years from the date of final acceptance of this work. Repair and replace work which becomes defective during the guarantee term, without cost to the City of New York.

1.10 SITE ENVIRONMENTAL PROCEDURES

A. Indoor Air Quality: Temporary ventilation: Provide temporary ventilation during work of this Section. Coordinate interior application of joint sealants with interior finishes schedule.

1.11 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. Joint primer, sealer and/or conditioner shall be as recommended by the sealant manufacturer for the surfaces to be adhered to.

B. Preformed joint fillers shall be nonstaining compatible with sealant and primer, and of a resilient nature and shall be one of the following:

1. Closed Cell Neoprene Joint Filler (for precast panel joints not compatible with Silicone Sealants) - ASTM D 1056, Class SC (oil resistant and medium swell), 2 to 5 psi compression deflection.
2. Expanded Polyethylene Joint Filler (for existing joints) - Flexible, compressible, closed-cell polyethylene of not less than 10 psi compression deflection (25%).
3. Closed Cell Polyurethane Joint Filler (for pavements, walks, and curbs) - Resilient, compressible, semi-rigid; W.R. Meadow's Ceramar or A.C. Horn's Closed Cell Plastic Foam Filler, Code 5401.

C. Backer Rod for General Vertical Use: ASTM C 1330, Types B or C, rod stock closed cell polyethylene foam, closed cell neoprene foam, or open cell urethane foam, as recommended by sealant manufacturer as being compatible both with the sealant used and the primer. Provide the following products and certification that it meets the requirements or Commissioner approved substitute:

1. SOF ROD as manufactured by Nomaco Inc. or Eva-Seal #30 Foam Backer Rod as manufactured by E-poxy Engineered Materials shall be used for all building joints. SOF ROD shall have a nonabsorbing outer skin and a highly resistant interior network of closed and open cells, which will not outgas when ruptured. Eva Seal #30 shall be a closed cell, cross-linked ethylene vinyl acetate copolymer foam.
2. GREEN ROD as manufactured by Nomaco, Inc. shall be used for paving and floor joints. Rod shall be a closed cell polyethylene rod extruded in continuous lengths.
3. Denver Foam as manufactured by Backer Rod Manufacturing and Supply Co. (Open Cell)

D. Accessory Items:

1. Bond Breaker Tape - Polyethylene or other plastic tape as recommended by the sealant manufacturer; non-bonding to sealant; self-adhesive where applicable; thickness, minimum 0.012 inch. Tapes manufactured by the following are acceptable:
   a. #40 or #531 (heavy duty) Bond Breaker Tape as manufactured by Valley Industrial Products, Huntington, New York.
   b. #50 Polyethylene Bond Breaker Tape as manufactured by Decker Mfg. Co., Fairfield, New Jersey.
   c. CRL Bond Breaker Tape as manufactured by C.R. Laurence Company Inc.
2. Cleaning Solvents - Oil free solvents as recommended by the

sealant manufacturer. Do not use reclaimed solvents.

3. Masking Tape - Removable paper or fiber tape, self-adhesive, non-staining.
4. Materials impregnated with oil, bitumen or similar materials shall not be used.

E. Sealant Colors

1. Exposed materials, provide color as indicated or, if not indicated, as selected by the Commissioner from manufacturer's standard colors.
2. Concealed materials, provide the natural color which has the best overall performance characteristics.

2.02 MATERIAL TABLE

NOTE: At the Contractors' option, a "Silyl-Terminated Polyether" compound as manufactured by BASF Building Products under the name "Sonolastic 150" or "ProSil^{sct}1" by Pecora acceptable for use in lieu of Type I and Type II materials as specified below.

A. Sealant materials shall be as follows and shall relate to scope of work described herein and shall form a general material reference for all sections performing sealant operations. Backer systems shall be as specified in Paraqraph 2.01 above and as suitable for intended substrate and joint conditions.

B. Type - I (For use in vertical expansion joints where extensive movement occurs and for general exterior sealant operations.)

Sealant compound - 2 component non-sag Polyurethane similar and equal to -

1. Tremco (Dymeric 240FC or Dymonic FC)
2. BASF Building Products (Sonolastic NP2)
3. Pecora (Dynatrol II)
4. Mapei (Mapeflex P1)

C. Type - IA (For use with pavements, walks, curbs, plaza decks and other such locations)

Sealant compound - 2 component self leveling polyurethane material similar and equal to -.

1. BASF Building Products (Sonolastic SL2 Horizontal)
2. Pecora (Urexpan NR-200 Horizontal/Dynatred Vertical)
3. Tremco (THC 900/901)
4. Mapei (Mapeflex P1 SL)

D. Type - II - GENERAL (For use in vertical expansion joints where extensive movement occurs and for general exterior sealant operations.)

Sealant compound - 1 part, low-modulus silicone sealant similar

and equal to -

1. Dow Corning (795)
2. General Electric (Silpruf)
3. Pecora (864)
4. BASF Building Products (Omniseal)
5. Tremco (Spectrem 1 or 2 as suitable for intended application)

Backing - Type "A" backer rod as per Paragraph 2.01.C above for general use and Type III sealant for moving joints.

E. Type - IIA - GLAZING SYSTEMS

Sealant compound - Silicone rubber of design recommended by the manufacturer for the intended application and similar and equal to -

1. General Electric -SSG 4000 OR 4200 Structural Glazing Sealant; 3211 or 3103 Insulating Glass Sealant; 2000 Weather Seal.
2. Dow Corning - 795, 895, 983 or 995 as suitable for encountered conditions.
3. Tremco Inc.- Tremco Proglaze SG or Spectrem 2 Structural Glazing Sealant; Tremco Proglaze II Insulation Glass Sealant.
4. Pecora #895

or other suitable combination as recommended by the nominated manufacturer of the overall window/curtain wall assembly.

F. Type - IIB - SANITARY SEALS (use at interior wet areas only - Counter tops to surrounds; Bath tub to tile walls and floors; Shower areas, joint to joint; Plumbing fixtures to walls; and like areas)

Material shall be a single component, mildew resistant silicone sealant similar and equal to -

1. Dow Corning - 786
2. General Electric - Sanitary 1700
3. Bostik - Silicone Rubber Bathroom Caulk.
4. Pecora - #898 or 863 at option of Contractor.
5. Tremco - Tremsil 200

G. Type - IV (For use in connection with roofing, flashing and waterproofing work)

Sealant compound - Single component non-sag Polyurethane similar and equal to -

1. Tremco (Vulkem-116)
2. BASF Building Products (Sonolastic NP1)

3. Sika Chemical Company (Sikaflex - 1a)
4. Tremco (Dymonic)
5. Pecora (Dynatrol I)

H. Type - V (For use in acoustical sealing operations)

Sealant compound - Butyl Rubber or Latex Base for developing acoustical requirements specified. Material shall be similar and equal to -

1. Pecora (BA-98)
2. W.W. Henry (313)
3. U.S. Gypsum (Acoustical Sealant)
4. Tremco (Acoustical Sealant)
5. Mason Industries, Inc. (Acoustical Caulking CC-75)

I. Type - VI (For interior sealant systems around door frames, window reveals and like locations in painted surfaces)

Sealant compound - Siliconized Acrylic Latex or FDC Siliconized Acrylic each with a 50 year warrantee similar and equal to:

1. RCS20 by GE-Silicones.
2. DAP® ALEX PLUS® Acrylic Latex Caulk Plus Silicone
3. LIFETIME® Siliconized Acrylic by Red Devil
4. Pro Select® Siliconized Acrylic Latex Caulk by Sherwin Williams

Backing - as required by conditions of use.

J. Type - VII - Fire Rated Caulking compound for bedding and/or sealing of joints in rated gypsum wall systems shall be similar and equal to: "AC20 - FTR" by Pecora; "Tremstop Acrylic" by Tremco; "Blockade" by DAP; "FS 1900 Series Sealant Intumescent Elastomeric Firestop" by International Protective Coatings, Inc. or approved equal.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 JOINT DESIGN

A. Joints shall be a maximum of 3/8 inch deep by minimum 3/8 inch wide.

B. Joints in concrete or masonry:

1. Depth of sealant shall equal width of joints in joints up to 1/2 inch wide; joints 1/2 inch to 1 inch wide, depth shall

be 1/2 inch.

2. For expansion joints or other joints 1 inch to 2 inch wide depth shall not be greater than 1/2 the applied sealant width and no greater than 5/8 inch for Type I nor 1/2 inch for Type II materials.

C. Joints in metal, glass and other non-porous surfaces: Depth shall be a minimum of 1/2 the applied sealant width, and shall in no case exceed the applied sealant width.

3.03 PREPARATION

A. Prepare joints in accordance with ASTM C 1193 and manufacturer's instructions.

B. 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. Do not limit cleaning of joint surfaces to solvent wiping; use methods such as grinding, 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.

Further where existing, non-contaminated joint compounds are encountered, removal of joint filler shall include removal of all cementitious, sealant, asphaltic or other jointing material, where or not similar to that specified as part of the work of this project. All surfaces shall meet all manufacturer requirements and restrictions for application and installation of specified products.

C. For Pavements, Walks, and Curbs

1. Set joint fillers at proper depth and position as required for installation of bond breakers, backer rods, and sealants. Do not leave voids or gaps between the ends of joint filler units.

a. Smooth Edged Joints: For joints between two concrete slabs or where new concrete abuts smooth-edged materials, use either cork joint filler or closed cell polyurethane joint filler.

b. Irregular Edged Joints: For joints where new concrete abuts granite curbs or other irregular edges, use closed cell polyurethane joint filler.

c. Prime all joint surfaces; Do not allow the primer/sealer to spill or migrate onto adjoining surfaces.

3.04 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.

B. Prevent three sided adhesion by use of bond breaker tapes or backer rods at the back of the joint. Install backer rods for all liquid sealants, except where specifically recommended against by sealant manufacturers. Install backer rods immediately before sealants, do not permit backer rods to get wet. Install backer rods at the proper depth to create the specified sealant depth, avoid placing backer rods too deep which will result in sealant failure due to excessive sealant depth. Backup material shall be suitable size and shape so that when compressed 20 to 50%, it will fit in all joints where required. Do not cut or puncture the surface skin of the rod.

C. Apply masking tape where required by surfaces encountered, and as may be determined by mockup testing, in continuous strips in alignment with joint edge. Remove tape immediately after joints have been sealed and tooled.

3.05 SEALANT INSTALLATION

A. Prime surfaces where required with primer recommended by sealant manufacturer and as determined by "bond" test required in Part 1 of this Section.

B. Apply, tool and finish sealant in accordance with manufacturer's recommendations.

C. 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. "Gun" devices shall have nozzles of proper size and shall provide sufficient pressure to completely fill joints as detailed.

D. 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. **All tooling shall be "dry".**

3.06 FIELD QUALITY CONTROL

A. Require sealant manufacturer to be present at project site to:
   1. Observe sealant mockup installation and to issue reports of observations.
   2. Conduct field pre-construction testing.

B. Test Samples
   1. If requested by the Commissioner, for each 1,000 linear feet of joint installed, cut out and carefully remove a 6 inch long sample of the undisturbed sealant and joint backer material from the newly installed Work. Remove the samples in the presence of the Testing Laboratory's Representative, who will retain them for evaluating and testing.
   2. Reseal cutout areas with the same type materials.

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. Clean up remaining defacement caused by the Work.

C. All finished work shall be left in neat, clean condition.

3.08 WASTE MANAGEMENT

A. Separate waste in accordance with the Waste Management Plan.

B. Close and seal tightly all partly used sealant containers and store protected in well-ventilated, fire-safe area at moderate temperature.

C. Place used sealant tubes and containers in areas designated for hazardous materials.

End of Section

SECTION 08 11 00

METAL DOORS AND FRAMES

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all labor, plant, equipment, materials, accessories, incidentals and the like necessary and/or required for the complete execution of hollow metal doors, door frames and accessory work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide hollow metal doors in configurations shown and/or required by drawings and/or schedules. Doors shall be complete with accessories required to comply with types indicated.
2. Provide welded hollow metal frames in configurations indicated for all openings scheduled and/or required to complete the work.
3. Properly prepare and reinforce all doors and frames for finish hardware. Prepare each door frame for 3 silencers per leaf.
4. All door edges (jambs, heads and bottoms) as well as full cross joins of frames shall be fully sealed and smoothed by fully welding and grinding.
5. Provide door louvers in style and design shown on the drawings and/or specified herein.
6. Furnish anchors for building into metal stud partitions, masonry and for welding to steel columns; coordinate with Sections 09 29 00, 04 20 00 and 05 12 00.
7. Provide, in all locations shown and/or required, hollow metal panels - supplemental access doors for service.
8. Factory prime all doors and frames. Provide field touchup of prime painting as part of the of work of this Section.
9. Provide all anchors, bolts, shims, screws, fastenings and all other supplementary parts indicated on drawings or as required to complete each item of work of this Section.
10. Hang, fit and lock all doors provided under this Contract using hardware furnished by the User of the Facility.

NOTES:

a. All hollow metal door and frame assemblies shall be fabricated from sheet steel conforming to ASTM A 525 for hot dipped galvanized material with A-60 or G-60 coating.

b. COORDINATE fabrication and reinforcing requirements herein with the hardware schedule shown on the drawings.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with

specific reference to those sections noted above and as follows:

A. 05 50 00 - Access panels as specified under Section)
B. 08 31 00 - Access panels for mechanical and electrical work
C. Division 26 - Electrical Work for security and alarm devices.

1.04 QUALITY ASSURANCE

A. All work of this Section shall conform to the following Standard Specification Requirements governing hollow metal construction operations.

B. Reference Standards

1. ASTM - American Society for Testing and Materials; 1916 Race Street; Philadelphia, PA 19103
   a. ASTM A 568 - Standard Specification for Steel Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
   b. ASTM A 591 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hop-Dip Process
   c. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   d. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
   e. ASTM A 1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
   f. ASTM A 1011 - Standard Specification for Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
   g. ASTM B 117 - Method of Salt Spray (Fog) Testing.
   h. ASTM D 1735 - Practice for Testing Water Resistance of Coating Using Water Fog Apparatus.
   i. ASTM E 2074 - Method for Fire Test of Door Assemblies.
2. ANSI - American National Standards Institute, Inc.; 1430 Broadway; NY, NY 10018 and Steel Door Institute
   a. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
   b. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
   c. ANSI/SDI A250.6 Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
   d. ANSI/SDI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 1998.
   e. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

f. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames (Formerly SDI-105).

3. UL - Underwriters Laboratory; 333 Pfingsten Road; Northbrook, IL 60062
   a. UL 10B, Fire Tests of Door Assemblies.
   b. UL 10C, Positive Pressure Fire Tests of Door Assemblies.
   c. UL - 1784-90 Air leakage test of door assemblies
4. NAAMM Hollow Metal Manual.
5. NFPA 80, Fire Doors and Windows and 252, Fire Tests of Door Assemblies.
6. Federal Specifications #RR-D-575B governing Hollow Metal Work.
7. Builder's Hardware Manufacturers Association.
8. NFPA 105-93 Smoke and draft control assemblies.

C. 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 metal UL, FM or WHI labels indicating the applicable fire class of the unit. Rivet or weld labels on the hinge edge of door and jamb rabbet of frame.
   1. Oversize Assemblies: Whenever fire rated assemblies are larger than size limitations established by NFPA, provide the manufacturer's certification that they have been constructed with materials and methods equivalent to requirement for labeled construction.
   2. See Door Schedule in the Drawings for Label Requirements (Class) for respective openings.
   3. Stairwell Doors: 250 degrees F (121 degrees C) or 450 degrees F (232 degrees C) temperature rise rating as well as the required fire rating.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from

recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Samples
   1. A 1 foot by 1 foot, 45 degree section of door frames showing construction and anchoring of buck.
   2. A 1 foot by 1 foot, 45 degree section of door showing complete construction and fastening.

B. Shop drawings covering all work included. Manufacturer's product data sheets may be submitted for standard work with concurrence of Commissioner.
   1. Shop drawings shall indicate profiles, gauges, sizes and reinforcing and anchorage devices, for securing to adjacent materials.

C. Certification of Specification Compliance.

D. Door schedule.

E. Hardware requirement list to be given to the User for furnishing of the materials.

F. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Inspect all metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Commissioner; otherwise, remove and replace damaged items as directed.

B. Store doors and frames at building site under cover. Place units on minimum 4 inches high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide space between stacked doors to promote air circulation. Blocking between stacked doors shall be positioned so as not to damage door and shall be large enough so stacked doors do not come into contact with each other.

1.07 TESTING AND PERFORMANCE

A. Performance Test for Steel Doors and Hardware Reinforcing (ANSI A151.1)
   1. The test specimen shall be a 3 feet by 7 feet normal size 1/4 inch door.
   2. The specimen shall be tested in accordance with the ANSI A151.1 procedure for the level A doors (1,000,000 cycles).
   3. The specimen shall be tested in accordance with the ANSI A151.1 procedure for twist test which requires a maximum pressure of 300 lbs.

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.

2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 MANUFACTURERS

A. Unless otherwise specified herein, all hollow metal work shall be constructed in full accordance with the drawings, approved shop drawings and these specifications and shall be of first quality, as constructed by -

1. Pioneer Industries
2. Bilt-Rite Steel Buck Corporation
3. American Steel Products Corporation
4. Ceco Door Products
5. Curries Co.; Div. Essex Industries, Inc.
6. Long Island Fireproof Door

or other current member of the Steel Door Institute or Hollow Metal Manufacturers Association.

2.02 MATERIALS

A. All steel shall be best quality American open hearth steel metal furniture stock conforming to ASTM Specifications A 1008, A 568, A 1011, A 924, A 653 or A 591 as applicable for intended usage and as may be standard with the nominated supplier.

2.03 MATERIAL GAUGES as established under SDI Classifications and/or modified herein.

A. Doors

1. Level 3, all interior doors; exterior units - Level 4
2. Doors shall be 1-3/4 inch thickness unless otherwise indicated in schedules.

Steel Thickness/Door Faces

Level	Model	Minimum Thickness		MSG No.(1)
		Inches	mm	
3	1	0.053	1.3	16
	2	0.053	1.3	16

	3	See Sec..2.3.3. Construction Features		16
4	1	0.067	1.7	14
	2	0.067	1.7	14

(1) MSG No. to be used for reference purposes only

B. Frames

Minimum Steel Thickness/Frames

Level	Thickness		MSG No. (1)
	Inches	mm	
4	0.067	1.7	14

(1) MSG No. to be used for reference purposes only

1. All welded frames - 14 gauge.

C. Miscellaneous Items

1.	Glazing Beads	18 gauge
2.	Door Reinforcements	12 gauge
3.	Hardware Reinforcement, all locks, hinges, bolts, closers, exit devices and the like	10 gauge
4.	All Other Work	12 gauge
5.	Head Reinforcement	12 gauge

D. Provide units (doors and frames) of galvanized steel in the following locations:
1. Exterior openings
2. Toilets rooms, locker rooms and like service spaces
3. Mechanical and electrical rooms/spaces.

2.04 CLEARANCES

A. Fabricate doors for their respective frames within the following clearances:
1. Jambs and Head: 3/32 inch to 1/8 inch.
2. Meeting Edges of Pairs: 1/8 inch to 3/16 inch.
3. Bottom: 1/4 inch, maximum.
4. Fire door undercuts shall comply with ANSI/NFPA 80, "Fire Doors and Fire Windows."
5. All clearances shall be, unless otherwise specified, subject to a tolerance of plus or minus 1/32 inch (0.8 mm).

2.05 CORE SYSTEM

A. Cores for interior non-rated doors shall be honeycomb sheet or polystyrene foam board bonded with adhesive to inside of both faces sheets with adhesive - crushing strength, 4,000 psf; lamination 1,100 psf in shear.

B. Cores for exterior doors shall be polystyrene foam board bonded to inside of both face sheets with adhesive - compressive strength, 1500 psi; shear strength, 18 psi; bond strength shall exceed strength of polystyrene so that delamination shall not occur under any operating conditions.

C. Cores for rated units shall be either a firerated honeycomb sheet

or foam core bonded to inside of both face sheets with adhesive - crushing strength, 4,000 psf; lamination 1,100 psf in shear.

2.06 PAINT COATING MATERIAL

A. Steel Sheet: Galvanized to ASTM A 653 G 90.

B. Rust inhibiting primer, baked on in fabricators shop.

C. Coat inside of frame profile with bituminous coating.

2.07 ACCESSORIES

A. Silencers: Resilient rubber fitted into drilled hole.

B. Removable Stops: Rolled steel channel shape.

C. Astragals for Double Doors: Steel, T shaped, specifically for double doors.

2.08 DOOR LOUVERS

A. Unit assemblies shall be similar and equal to those as manufactured by Anemostat Door Products a Mestek Company.

B. Models

Fixed Blade Design - FDLS, 18 gauge frame by 18 gauge blades.

Fire Rated Design - FLDL-UL each bearing the listing mark of the rating agency affixed in the top right hand corner of the louver assembly.

C. Fabrication shall be as specified elsewhere in this Section.

D. Finish - Field over factory baked primer; coordinate with Section 09 90 00.

2.09 TRANSFER LOUVERS

A. Unit assemblies within building, not set in doors or transoms shall be "steel" blade, channel frame design of a minimum 50% free air and shall be fabricated from 18 gauge steel. Units to be field finished.

2.10 FABRICATION REQUIREMENTS/WORKMANSHIP

A. All hollow metal work shall be accurately fabricated and neatly assembled so as to be free from dents, tool marks, warpage, buckles or open joints. All lines shall be straight and true to curvature as required, arrises and angles as sharp as practical, molding true to profile, miters formed in true alignment and abutting profiles shall intersect accurately.

B. Molded members and moldings shall be as shown on drawings, unless otherwise approved. Stock moldings which closely approximate the contours shown on the Drawings will be considered for substitution.

C. All drilling and tapping for hardware shall be located by templates supplied by Hardware manufacturer so that accurate alignment will be secured. Templates shall be in the shop before manufacturing is commenced.

D. All members shall be accurately fastened together so as to provide rigid construction in the assembled work. Removable members shall be secured with countersunk, tamperproof, spanner head machine screws not more than 2 inches from each end of member and at intermediate intervals not more than 12 inches. All connections,

except those of removable members, shall be welded.

E. All exposed face joints between plane members shall be spot welded and filled with plastic body filler and finished smooth and flush so as to be invisible.

F. Work damaged in transit shall not be set, but shall be replaced with perfect work at the Contractor's expense.

2.11 SINKAGE, CUTOUTS, REINFORCEMENT

A. Sinkage, cutouts and concealed reinforcement shall be provided as required for the proper installation and attachment of all hardware.

B. Sinkages shall be provided for butts, lock fronts and strikes so that the exposed surfaces of hardware will finish flush with adjacent surfaces.

C. Cutouts shall be provided for all mortised hardware.

D. Concealed reinforcement shall be provided for all screws used in the attachment of hardware. Reinforcement shall be provided for door checks on all door and door bucks regardless of whether or not door checks are specified for doors.

E. Provide plaster boxes at all strikes for security purposes.

F. Locations for hinges, knobs, locksets, latches and all other applied hardware shall be in accordance with Table V of SDI reference standard, shown on drawings and/or required by ANSI A117.1.

2.12 COMBINATION FRAME AND TRIM

A. Combination frames and trim shall be of size and design shown on drawings formed with rabbets of width to meet requirements of each particular wall thickness; having integrally mounted trim, loose moldings according to contours of details; reinforced and drilled and tapped for hardware. The type as detailed covers the general run of frames for the work, but the forming shall be varied from that shown where indicated by specific details or necessitated by other conditions.

B. Combination frame and trim shall be placed at all openings shown on drawings.

C. Miter corners accurately, weld and dress exposed joints to render same inconspicuous. Fill all cross joins. Spreaders shall be removable.

D. Frame bottoms shall be furnished with suitable clips for secure attachment.

E. Heads of frames for openings wider than 3 feet 4 inches shall be reinforced with angles or channels formed of No. 10 gauge steel spot welded unless in rated openings.

F. Furnish anchors at each jamb for each 30 inches of door height or fraction thereof. Vary anchor types to provide positive fastening to adjacent construction.

G. Slots shall be provided at upper section of vertical members for securing temporary wood blocking to which shall be nailed the braces for holding jambs in place while masonry walls are being constructed.

2.13 HOLLOW METAL DOORS - Conventional, Flush Design (with or without vision panels)

A. Doors shall be of type and in locations as required by the Drawings.

B. All jointing shall be invisible, reinforced and dressed smooth. Doors shall be free of wind, reinforced at corners and elsewhere sufficiently to prevent sagging or twisting.

C. Doors shall be fabricated from two skins of sheet steel with all outer edges turned and formed into two four sided pans and laminated to either side of core materials specified in Part 2 of this Section. **Note - option for use of flush end closures, top and bottom in/lieu/of full four sided pans. In all cases, all door pan and, if opted for, flush end closures, seams shall be continuously welded and ground smooth.**

D. Doors shall be reinforced with suitable sections as may be required to receive hardware items and to provide resistance to operating stress and strain.

E. Reinforcement for escutcheons and locks shall be boxed with No. 16 gauge steel, with spring leaf contact for lock cases.

F. Where doors, **other than stile and rail design**, have glass or louver panels, they will be provided with hollow metal glazing beads and muntins as detailed, and have No. 16 gauge steel channels as reinforcing around perimeter of sash opening, spot welded at 3 inch intervals. Provide removable cold drawn hollow metal one piece glazing stops formed into a four-sided frame, secured with oval head countersunk tamperproof screws 12 inches o.c. and no less than 2 screws per piece.

G. All doors shall be cut and reinforced to receive all finish hardware; all necessary drilling and tapping for screws for hardware shall be done in the shop.

H. Lock stiles of hinged doors shall be beveled.

I. Provide steel louvers as specified elsewhere in this section in doors where required by the Drawings. Assemblies to have free air requirements as shown. **Assemblies shall be of fusible link design when located in rated openings.**

2.14 SHOP PAINTING - See 2.06 above for Material Requirements

A. Prime paint all surfaces included herein, both inside and outside.

B. Before the different parts are assembled, all surfaces shall be thoroughly cleaned, rust and scale removed, and washed with benzene until all oil, grease and other foreign matter is removed.

C. Before assembling, all inaccessible surfaces, except welded surfaces, shall be coated with rust inhibitive paint.

D. After fabrication, thoroughly clean, pretreat and dip or spray all surfaces of the doors and frames exposed to view with a baked on coat of rust inhibiting primer.

2.15 ANCHORAGE DEVICES

A. Floor Anchors:
Floor anchors shall be securely welded inside each jamb.
Minimum thickness of floor anchors shall be 14 gauge.

B. Jamb anchors:

1. Frames for installation in masonry walls shall be provided with 4 adjustable jamb anchors of the T-strap or stirrup-and-strap type.
2. Anchors shall not be less than 16 gauge or 0.156 inch diameter steel wire.
3. Stirrup straps shall be not less than 2 inch by 10 inch in size, corrugated and/or perforated.
4. Frames for installation in stud partitions shall be provided with 4 steel anchors of suitable design, not less than 18 gauge thickness, securely welded inside each jamb.
5. Frames to be anchored to previously placed concrete or masonry shall be provided with minimum 3/8 inch concealed bolts set into expansion shields or inserts at 6 inches from top and bottom and 24 inches o.c. Reinforce frames at anchor locations with 16 gauge sheet steel stiffeners welded to frame at each anchor.

2.16 PROTECTION

A. All materials shall be suitably protected prior to shipment. This protection shall be so arranged to protect all finished hardware which may be attached. All materials shall be delivered to the site in perfect condition.

2.17 Balance of materials required for completion of work herein shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSTALLATION

A. Frames

1. Prior to installation all frames must be checked and corrected for size, swing, squareness, alignment, twist and plumbness. Permissible installation tolerances shall not exceed the following:

•	Squareness	+ 1/16" measured on a line, 90 degrees from one jamb, at the upper corner of the frame at the other jamb.
•	Alignment	+ 1/16" measured on jambs on a horizontal line parallel to the plane of the wall.
•	Twist	+ 1/16" measured at face corners of jambs on parallel lines perpendicular to the plane of the wall.
•	Plumbness	+ 1/16" measured on the jamb at the floor.

2. Place frames prior to enclosing walls and ceilings. Set frames accurately in position, plumbed and braced securely until permanent anchors are set. Remove shipping bar spreader and insert a wood spreader cut to the opening width, notched to clear the stops.
3. Fill frames in masonry walls with mortar.

4. When temperature conditions necessitate an additive to be used in the plaster or mortar to prevent freezing, the contractor installing the frames shall coat the inside of the frames, in the field, with a corrosion inhibiting bituminous material.
5. SDI-105, "Recommended Erection Instructions for Steel Frames" and SDI-110 "Standard Steel Doors and Frames for Modular Masonry Construction" shall indicate the proper installation procedures.

B. Doors
1. Install doors plumb and in true alignment in a prepared opening and fasten them to achieve the maximum operational effectiveness and appearance.
2. Proper door clearance must be maintained in accordance with SDI-110.
3. Where necessary, only metal hinge shims are acceptable to maintain clearances.
4. "Installation Guide for Doors and Hardware" published by DHI is recommended for further details.

3.02 INSTALLATION - Hardware

A. Ensure that walls and frames are square and plumb before hardware installation.
B. The installer shall notify the architect, in writing, of all unacceptable condition that could affect the proper operation of the finish hardware.
C. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
D. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation.
E. Unless otherwise specified, locate all hardware in accordance with the recommended locations for builders hardware for standard doors and frames as published by the Door and Hardware Institute.
F. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
G. Unless otherwise specified or detailed, install thresholds with the bevel in vertical alignment with the outside door face. Notch and closely fit thresholds to frame profile. Set thresholds in full bed of sealant.
H. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
I. Locate floor stops not more than 4 inches from the wall.
J. Shim doors as required to maintain proper operating clearance between door and frame.
K. Use only fasteners supplied by or approved by the manufacturer for each respective item of hardware.

L. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

M. Where necessary, adjust doors and hardware as required to eliminate binding between strike and latch bolt. Doors should not rattle.

N. Install door closers on corridor side of lobby doors, room side of corridor doors, and stair side of stairways.

O. Adjust spring power of door closers to insure exterior and fire rated doors will consistently close and latch doors under existing conditions. Adjust all other door closers to insure opening force does not to exceed 5 lbs.

P. Adjust "sweep", "latch", & "back check" valves on all door closers to properly control door throughout the opening and closing cycle. Adjust total closing speed as required to comply with all applicable state and local building codes.

3.03 ADJUSTING AND CLEANING:

A. Adjust and check for proper operation and function. Replace units which cannot be adjusted to operate freely and smoothly.

B. At final completion, and when H.V.A.C. equipment is in operation, installer shall make final adjustments to and verify proper operation of all door closers and other items of hardware. Lubricate moving parts with type lubrication recommended by the manufacturer.

C. All hardware shall be left clean and in good operation. Hardware found to be disfigured, defective, or inoperative shall be repaired or replaced.

D. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of space or area, return to work during week prior to acceptance or occupancy, and make final check and adjustment of hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors.

3.04 PROTECTION

A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.

B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.05 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 08 31 00

ACCESS DOORS/PANELS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the furnishing of access doors for access to all concealed valves, shock absorbers, to all other concealed parts of the plumbing, heating, fire protection and electrical systems that require accessibility for the proper operation and maintenance of the systems to the General Contractor for installation assignments as well as access to spaces indicated on the drawings.

Access doors in gypsum and/or plaster work or masonry will be installed under the respective phases of operations governing substrates in which units are to be installed.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 04 20 00 - Unit Masonry
B. 09 29 00 - Gypsum Drywall
C. Mechanical and electrical special conditions and related individual sections (Divisions 21, 22, 23 and 26)

1.04 QUALITY ASSURANCE

A. All materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer and other pertinent characteristics.
B. Materials shall be stored under conditions recommended by the manufacturer.
C. Fire Rated Doors:
   1. Fire Rated Access Doors For Walls: Complete assemblies complying with Underwriter's Laboratories, Inc (UL) requirements for 1-1/2 hour "B Label" rating. Identify each assembly with UL label.
   2. Fire Rated Access Doors For Ceilings: Complete assemblies complying with Warnock Hersey (WHIG) requirements for one-hour combustible and one-hour non-combustible floor/ceiling systems. Identify each assembly with WHI label and additional NFPA label indicating "For Horizontal Installation".

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the

like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop drawings of all fabricated items showing complete construction details, erection requirements and fastenings.
B. Full size samples of units to be incorporated in the work. Samples shall be incorporated as part of the contract obligations.
C. Certification of Specification Compliance.
D. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer and other pertinent characteristics.
B. Materials shall be stored under conditions recommended by the manufacturer.

Part 2 - PRODUCTS

2.01 GENERAL

A. Access panels except as specified herein shall be factory prime painted and furnished with cylinder lock and two keys; keying instructions will be available from the Commissioner, units shall be masterkeyed.

2.02 FABRICATION

A. Fabricate access door assemblies as integral units complete with all parts and ready for installation.
B. Fabricate units of continuous welded steel construction unless otherwise indicated or specified. Grind welds smooth and flush with adjacent surfaces.
C. Attachment devices shall be of size and type required to secure access doors to types of supports indicated on the Drawings.
   1. Allowable Size Variations: Manufacturer's standard size units which vary slightly from the sizes indicated may be acceptable, subject to the approval of the Commissioner.

2.03 MECHANICAL/ELECTRICAL PANELS

A. Units shall be in design and as manufactured in accordance with the following -

1. Acoustical Tile - Karp (KSTC [concealed grid] or KSTE [lay-in ceiling systems]); Milcor; Nystrom, Inc.; Larsens; MM Systems Corp. or approved equal.
2. Concrete and Masonry Surfaces - Karp (DSB-214 SM); Milcor; Nystrom, Inc.; Larsens; MM Systems Corp.; or approved equal.
3. Drywall Surfaces - LOCKABLE
   a. Ceilings - Karp (KSTDW); Nystrom, Inc.; Larsens; MM Systems Corp. or approved equal.
   b. Walls - Karp (RDW); Nystrom, Inc.; Larsens; MM Systems Corp. or approved equal.
4. Plaster Surfaces - Karp (DSC-214 PL); Milcor; Nystrom, Inc.; Larsens; MM Systems Corp.; or approved equal.

2.04 ADDITIONAL REQUIREMENTS AND RESTRICTIONS

A. Where units occur within rated assemblies, provide rated access doors in "B" Label construction conforming to Underwriters Laboratories File #R-10808 and/or Warnock Hersey File #U-51468 and similar and equal to those as manufactured by the above and shall be either insulated (KRP-350R) or uninsulated (KRP-450FR) as conditions dictate.

B. Units shall be fully galvanized construction where used on exterior.

C. Units within "wet" areas shall be of stainless steel construction.

D. All units shall be equipped with suitable anchorage devices for securement to intended substrates.

NOTE: Refer to Sections 05 50 00 and 08 11 00 as well as Divisions 21, 22, 23 and 26 so as to avoid possible conflict and/or duplication, work included in said sections and divisions will govern project requirements.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION

A. Locate all access doors in a workmanlike manner also in closets, storage rooms and/or other non-public areas, positioned so that the junction can be easily reached and the size shall be sufficient for this purpose (minimum 16 inch by 16 inch).

B. When access doors are required in corridors, lobby or other habitable areas, locate as directed by the Commissioner.

C. Units shall be installed in required substrates by respective trades, true to line and level in accordance with approved shop

drawings.

D. All operating units shall be adjusted and left in perfect working order.

3.03 CLEANUP AND PROTECTION

A. All debris resulting from construction operations will be removed daily and upon final completion, all operating parts will be cleaned and protection removed.

3.04 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 08 33 30

COILING DOORS AND GRILLES

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all materials, accessories, incidentals and the like necessary and/or required for the complete execution of all coiling doors and grilles and accessory work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Remove existing overhead door at Flushing Avenue entrance/exit and all operating hardware, tracks, etc. and provide new as specified herein.
2. Remove existing door at Little Nassau Street entrance/exit and provide new insulated, flat slat, motorized rolling shutter which can be inside mounted. Coordinate with Section 05 50 00 for new frame.
3. Provide all coil boxes, counter balances, brackets, structural supports, hangers, guide rail retainers, floor guides and the like necessary and/or required to complete the work of the Project.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. Division 26 - Electrical Work

1.04 QUALITY ASSURANCE

A. The intent of this Section is to establish sole responsibility for the installation of the coiling doors and grilles including all appurtenances as required to insure total performance of systems.

B. Coordinate all work of this section with others so as to insure structural stability and appearance.

C. Qualifications:

1. Manufacturer Qualifications: ISO 9001:2000 registered and a minimum of three years experience in producing fire units of the type specified.
2. Installer Qualifications: Manufacturer's approval.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Certification of specification compliance.
B. Shop drawings, showing dimensions, connections, etc. as required by installation.
C. The Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.
D. Maintenance and Operating Manuals: Furnish complete manuals describing the materials, devices and procedures to be followed in operating and maintaining all doors under this section. Include manufacturer's brochures and parts lists describing the actual materials used in the product.
E. Material Safety Data Sheet (MSDS) must be submitted for each manufactured product.

1.06 CODE REQUIREMENTS

A. Fire-Rated Assemblies: Provide all doors with fire resistance rating required to comply with governing regulations which are inspected, tested, listed and labeled by UL, complying with NFPA 80 for class of opening. Provide UL label permanently fastened to each fire door assembly. Door will be tested to UL10B.
B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of federal, state and municipal authorities having jurisdiction.
C. Provide doors with Underwriters' Laboratories, Inc. label for "Leakage Rated Assembly" or "S" label. Comply with NFPA 105 air leakage requirements. Pass UL test procedure 1784.

1.07 ADDITIONAL MATERIALS

A. Additional slats - 5% of total/unit assembly in each material full lengths to permit replacement.

1.08 MANUFACTURER GUARANTEE/WARRANTY

A. Standard Warranty: Two years from date of shipment against defects in material and workmanship.

Part 2 - PRODUCTS

2.01 FLUSHING AVENUE ENTRANCE

A. Manufacturer: Vertical acting doors with integral egress doors shall be the model E5000-IS-SS as manufactured by McKeon Door Company, Acme, Overhead Door, Cornell or approved equal.

B. Curtain: Shall be assembled of interlocking stainless steel slats. Slats shall have a combination of endlocks and widlocks locking each end of all alternate slats to act as a wearing surface, maintain slat alignment and retain the curtain in the guides under wind pressure. Curtain shall be formed of 20 gauge front and back panel slats. The void of the curtain slats shall be filled with foamed-in-place polyurethane insulation and the front and back panel slats must have a positive interlock. Slats with snap-in back panels are not acceptable. Slats: Shall be of a cross section not less than 3" wide by 1" deep.

C. Swinging Egress Doors: Incorporated within the curtain shall be swinging type stainless steel doors in quantities as indicated in the contract drawings designed and built as an integral part of the door's assembly.

1. Door Frames: Shall be a stainless steel unit type, 14 gauge.
2. Door Assemblies: Complete with doors, hinges, and locking channel mechanisms. 20 gauge stretcher leveled, stainless steel faces.
3. Hardware: Panic Exit Devices: Flush mounted integral type exit devices on one face and with pull handles on opposite face of the swinging doors. Closers: Shall be concealed type.

D. Guides: Each guide assembly shall be fabricated of a minimum 4" x 4" stainless steel support angle, a 2½ " x 4" inner guide stainless steel angle and a 4" x 4" outer guide stainless steel angle. Guides shall be designed with integral windbars in order to engage and retain the curtain under heavy wind pressures. Provide neoprene weather seals extending the full height of both guides.

E. Mounting Brackets: Fabricated of hot rolled 3/16" stainless steel plate minimum, brackets shall be provided to house ends of the counterbalance barrel assembly.

F. Hood: Shall be provided to entirely enclose curtain and counterbalance barrel assembly. Hood shall be fabricated 22 gauge stainless steel and designed to match brackets. Top and bottom shall be bent and reinforced for stiffness. Provide internal neoprene air baffle to minimize air infiltration at the head.

G. Counterbalance Assembly: Door shall be counterbalanced by means of adjustable steel helical torsion springs attached to shaft enclosed in pipe with required mounting blocks or rings for attachment of curtain. Grease sealed bearings or self-lubricating graphite bearings shall be attached to the spring barrel which shall be fabricated of hot formed structural quality carbon steel seamless pipe.

H. Electric Motor Operator: Coiling insulated service door shall be provided with a compact power unit designed and built by the coiling insulated service door manufacturer. Operator shall be equipped with an adjustable screw-type limit switch to break the circuit at termination of travel. High efficiency gearing running in an oil bath, shall be furnished together with a magnetic

operated brake, completely housed to protect against damage, dust and moisture. An efficient overload protection device, which will break the power circuit and protect against damage to the motor windings shall be integral with the unit. Operator is to be housed in a NEMA type 1 enclosure.

1. Motor: Shall be intermediate duty, thermally protected, ball bearing type with a class A or better insulation. Horsepower of motor is to be 1/3hp minimum or of manufacturer's recommended size, whichever is greater.
2. Starter: Shall be size "0" magnetic reversing starter, across the line type with mechanical and electrical interlocks, with 10 amp continuous rating and 24 volt control circuit.
3. Reducer: Spiral gear type, 70% efficiency minimum.
4. Brake: Magnetically activated, integral within the operator's housing.
5. Control Station: Provide surface mount push button control station marked open, close and stop.

I. Obstruction Sensing Device: The coiling insulated service door shall be designed with an obstruction sensing safety edge. In the event that the safety edge meets an obstruction during the normal closing operation, the coiling insulated service door shall stop, reverse and return to the open position.

J. Finish: After completion of fabrication, clean all metal surfaces to remove dirt. All steel components shall receive two coats of rust inhibitive primer. All exposed stainless steel components shall be of type 304 with number 4 polish finish.

2.02 LITTLE NASSAU STREET ENTRANCE

A. Rolling Service Doors are to be as manufactured by McKeon (Model IS3016-ADF-SS) or equal by Acme Rolling Steel Door Corporation Albany; Cornell or Overhead Door Corporation.

B. Operation: Door to be motor operated (MO). Mounted between jambs and under lintel.

C. Curtain: Shall be assembled of interlocking stainless steel slats. Slats shall have a combination of endlocks and windlocks locking each end of all alternate slats to act as a wearing surface, maintain slat alignment and retain the curtain in the guides under wind pressure. Curtain shall be formed of 16 gauge front panel and 20 gauge back panel slats. The void of the curtain slats shall be filled with foamed-in-place polyurethane insulation and the front and back panel slats must have a positive interlock. Slats: Shall be of a cross section not less than 3" wide by 1" deep.

D. Bottom Bar: Shall consist of two (2) angles, each not less than 2" x 2" x 1/8" stainless steel formed to fit slats.

E. Guides: Each guide assembly shall be fabricated of a minimum 4" x 4" stainless steel support angle, a 2½ " x 4" inner guide stainless steel angle and a 4" x 4" outer guide stainless steel angle. Guides shall be designed with integral windbars in order to engage and retain the curtain under heavy wind pressures. Provide neoprene weather seals extending the full height of both

guides.

F. Mounting Brackets: Fabricated of hot rolled 3/16" stainless steel plate minimum, brackets shall be provided to house ends of the counterbalance barrel assembly.

G. Hood: Shall be provided to entirely enclose curtain and counterbalance barrel assembly. Hood shall be fabricated 22 gauge stainless steel and designed to match brackets. Top and bottom shall be bent and reinforced for stiffness. Provide internal neoprene air baffle to minimize air infiltration at the head.

H. Counterbalance Assembly: Coiling insulated service door shall be counterbalanced by means of adjustable steel helical torsion springs attached to shaft enclosed in pipe with required mounting blocks or rings for attachment of curtain. Grease sealed bearings or self-lubricating graphite bearings shall be attached to the spring barrel which shall be fabricated of hot formed structural quality carbon steel seamless pipe.

I. Electric Motor Operator: Coiling insulated service door shall be provided with a direct drive power unit model type ADF. The operator shall not utilize any drive chains between the door's inner shaft and the motor operator, the drive shaft of the door shall run directly into the gearbox of the operator without the use of any drive chains or drive sprockets. High efficiency helical gearing running in an oil bath shall be furnished together with a rectifier-operated brake completely housed to protect against damage, dust, and moisture. An efficient overload protection device, which will break the power circuit and protect against damage to the motor windings shall be integral with the unit. The motor operator shall be designed to operate the door at an average speed of 6" per second. Operator is to be NEMA type 1 enclosure.

1. Motor: Shall be intermediate duty, thermally protected, ball bearing type with a class A or better insulation. Horsepower of motor is to be 3/4hp minimum or of manufacturer's recommended size, whichever is greater.
2. Starter: Shall be size "0" magnetic reversing starter, across the line type with mechanical and electrical interlocks, with 10 amp continuous rating and 24 volt control circuit.
3. Reducer: Heliacal gear type, 75% efficiency minimum.
4. Brake: Magnetically activated, integral within the operator's housing.
5. Control Station: Provide surface mount push button control station marked open, close and stop.

J. Obstruction Sensing Device: The coiling insulated service door shall be designed with an obstruction sensing safety edge. In the event that the safety edge meets an obstruction during the normal closing operation, the coiling insulated service door shall stop, reverse and return to the open position.

K. Finish: After completion of fabrication, clean all metal surfaces to remove dirt. All steel components shall receive two coats of rust inhibitive primer. All exposed stainless steel components shall be of type 304 with number 4 polish finish.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 ERECTION

A. Perform installation using only factory approved and certified representatives of the door manufacturer.

B. Install door assemblies at locations shown in perfect alignment and elevation, plumb, level, straight and true.

C. Adjust door installation to provide uniform clearances and smooth non-binding operation.

D. Install wiring in accordance with applicable local codes and the National Electrical Code Standard. Materials shall be UL listed.

E. Test door closing sequence when activated by the building's fire alarm system. Reset door after successful test.

3.03 PROTECTION AND CLEANING

A. Protect installed work using adequate and suitable means during and after installation until accepted by City of New York.

B. Remove, repair or replace materials which have been damaged in any way.

C. Clean surfaces of grime and dirt using acceptable and recommended means and methods.

3.04 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 08 51 10

ALUMINUM WINDOWS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all materials, accessories, incidentals and the like necessary and/or required for the complete execution of all replacement aluminum windows and related accessory work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Remove existing windows 27 and 31 and replace with new fixed sash, natural anodized, and glazed with tempered insulating glass and equipped with louvers for new mechanical system for Map Room 204.
2. Coordinate with Section 06 00 00 for temporary enclosures to maintain existing structure in a safe and weathertight condition.
3. Provide a complete panning trim systems for both exterior and interior closure of new window systems.
4. Provide all anchors, supports, brackets, expansion devices, fasteners, blocking, insulation, vents, flashings, weeps and similar elements shown and/or required in conjunction with the required replacement work.

NOTE: Anchorage devices shall be of such design and number so as to provide a secure mounting for a plumb and level installation without rack or warp or other distortion which may affect operation or weathertightness of window.

Anchorage system shall allow for thermal and structural movement. Anchorage systems must be designed to -

a. Support dead load of window;
b. Resist applied forces such as negative and positive wind loading;
c. Permit thermal movement.

Anchorage and sill supports of window shall be designed to adequately withstand forces from foot traffic.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 06 00 00 - Material requirements and restrictions governing blocking, padding, insulation, trim and the like in connection with preparation of openings and setting of windows

1.04 QUALITY ASSURANCE

A. All units furnished under this section shall conform to "A" quality standards as defined by AAMA with basic window members fabricated from aluminum alloy shapes and sections.

B. All units furnished under this section shall be made by manufacturers who will be required to certify that he is an established company engaged in the manufacture and installation of units of the types and quality specified and required for this project for a period of 3 years and further; so issue to the Commissioner a list of project installations substantiating actual weatherability, exposure and usage.

C. Installation of work of this Section shall be performed by a Specialty Subcontractor under direct supervision, and in accordance with the recommendations of the unit manufacturer;

Further, it is the full responsibility of the Contractor to provide all materials, fully processed, prefitted and prepunched, insofar as possible, so that field cutting, ripping and close fitting at the site will be reduced to the necessary minimum.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Finish samples of all aluminum to be incorporated in the work.

B. Shop drawings showing -
   1. Window construction details;
   2. Window installation and anchorage details.

C. Laboratory test results indicating actual testing versus minimum testing requirements (as applicable for systems incorporated in project) established in AAMA guidelines for nominated window types for -
   1. Air leakage;
   2. Water drainage;
   3. Water resistance;

4. Uniform load deflection;
5. Uniform load structural;
6. Safety drop;
7. Thermal performance;

each for the performance class of unit as listed in Part 2 of this Section.

D. Certification of specification compliance.

E. This Contractor shall take all necessary field measurements prior to fabrication and installation of work of this Section and shall assume complete responsibility for accuracy of same.

F. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 CERTIFICATION AND TESTING

A. All tests referred to in these specifications shall be conducted by the recognized independent testing laboratory as approved by the AAMA.

Certified test reports, must be submitted as/Paragraph 1.05 above. All tests must meet or exceed the values as set by the AAMA, or as contained herein, whichever standard is higher.

B. The Commissioner, at his discretion, may make certain Air Infiltration and Water Resistance Tests, on a random basis, by static test method, of "In Place" units. Field testing shall be in accordance with AAMA 502-90, Test Method "A".

C. Openings or units which fail to comply with subject test shall be rejected and all costs for corrections to meet the standards as well as future testing for verification shall be borne by the Contractor.

D. Notification by the Commissioner to the Contractor that his installation is sub standard and does not meet the specifications shall be deemed sufficient notice to the Contractor that he is proceeding with any further installation at his own risk, until he has corrected any of the problems which may have caused the failure of the installation.

E. Commissioners' acceptance of the installation as a result of the field testing shall have no bearing whatsoever on the terms and conditions of the guarantee/warranty requirements and shall not be used by either party as "self-serving" notice in any further dispute which may arise.

1.07 ENGINEERING REQUIREMENTS: All window systems shall be contractor and/or vendor engineered by a licensed professional engineer registered in the jurisdiction of the work to the following requirements and evidence, in the form of drawings and calculations, shall be delivered to the Commissioner for approval; coordinate with Section 05 40 00 for additional information as to engineering criteria.

A. Window wall framing members to be designed in accordance with the NYSBC, Exposure B and ASCE 7-02 requirements for Basic Wind Speed (3 second gust) = 95 mph

B. Wind Load Importance Factor (IW) = 1.15
C. Glass shall be designed as required by applicable code governing wind loading for particular zone..
D. Where a framing member reaction is resisted by a continuous element, maximum assumed effective length of resisting element shall be four times the bearing length, but not more than 1 ft (305 mm).
E. Thermal breaks and isolators shall be assumed to have no ability to transfer shear stress for composite action of flexural members. Elements joined by a thermal break shall be assumed to act separately.

1.08 SPECIAL GUARANTEE/WARRANTY TERMS
A. Windows and accessories shall be guaranteed for workmanship and materials for a period of 1 year in accordance with the Conditions; further, Insulated glass manufacturer shall warrant seals for 10 years;
B. NO PRODUCTS that are required to be returned to the manufacturer for a guarantee/warranty determination shall be incorporated in the work of this project.
C. All repair work, if any, shall be arranged for by this Contractor in accordance with the terms of the guaranty/warranty provision contained herein and performed on the project site by the manufacturer or his qualified representative. All such repairs and/or replacements, parts or labor shall be the responsibility of the manufacturer.
D. Guarantee/warranty shall be issued by the manufacturer of the windows.

Part 2 - PRODUCTS

2.01 GENERAL
A. For the purposes of establishing standards of quality and levels of performance and not for the purposes of limiting competition, the basis of this specification is upon fixed, factory glazed window systems with internal and external trim as well as required reinforcing all conforming to the requirements of AAMA 101/I.S.2/A440-05 and performance requirements set forth below.
B. Units manufactured by the following and conforming to the general design and meeting the performance guidelines established herein are considered equivalent.
1. Traco (NX-280/FW-C50)
2. Graham
3. Champion
4. Capitol

2.02 MATERIALS - Aluminum extrusions: extruded by the window manufacturer from commercial quality 6063-T5 alloy; free from defects impairing strength and durability.

2.03 FABRICATION - Frame: tubular members; corners mitered, reinforced, and joined by zinc gussets designed to be disassembled, if necessary, with common tools; factory-sealed with sealant conforming to AAMA 800-07.

2.04 INSULATING GLASS UNITS - Spacer: extruded thermoplastic butyl with integrated desiccant; Dual-seal durability: conformance to ASTM E 2190-02; visible, permanent IGCC certification label on air spacer. Exterior glass lite - ¼" Low E, tempered; Interior glass lite - ¼ inch clear tempered.

2.05 FINISH ON ALUMINUM EXTRUSIONS

A. Application: on clean extrusions free from serious surface blemishes; on exposed surfaces visible when installed product's operating sash are closed.
B. Coating: clear anodize.
C. Quality standard: conforming to AAMA 611-98.
D. Thickness: AAM10C22A41 Class I - .7 mils #215 [AAM10C22A31 Class II - .4 mils #204].

2.06 INSTALLATION ACCESSORIES

A. Material: extruded aluminum; nominal .062" wall; with exposed surfaces finished to match window color and finish performance; concealed fasteners; required weatherseals; designed for unrestricted expansion and contraction.
B. Exterior: preset panning with extruded aluminum sill.
C. Interior: two-piece snap trim.
D. Strap Anchor.

Part 3 - EXECUTION

3.01 INSPECTION AND PREPARATION

A. Remove all necessary portions of window frames, sash members, transoms, fixed panels, or other existing materials which are required to be removed or altered to permit the proper installation of the new materials, windows, and the like as shown on the drawings and/or described in these specifications.
B. Any damage to and repairs made necessary by the removal of old materials to adjoining surfaces shall be remedied by this Contractor.
C. All surfaced areas shall be properly prepared and cleaned prior to installation of window units or trim.
D. Provide all required new treated wood blocking, shimming, continuous liners or furring as required.

3.02 DELIVERY, ERECTION AND ADJUSTMENT

A. All work shall be manufactured in ample time so as to not delay progress of the building. Furnish and maintain sufficient mechanics to erect work in such manner so as not to delay other contractors.
B. All items furnished under the work of this Section shall be installed in accordance with the requirements of the drawings and with the approved shop drawings of the manufacturer.
C. Backseal, butter and properly fasten all assembled window unit materials prior to erection.
D. Check corner seals prior to, and after installation to insure same are intact; repair if damaged.

E. Units shall be anchored at the jambs only with retainers placed at heads and sills.

F. Provide "isolation" medium at dissimilar materials, if same are used for anchorage elements.

G. Extreme care shall be taken and windows and frames shall be erected plumb, level and true, relative to the building structure to provide proper contact and satisfactory operation.

3.03 PROTECTION AND CLEANING

A. Be responsible for protecting all work of this Section during construction and for cleaning such at completion of the building.

B. Materials used to protect and clean work shall not be damaging to the work and adjacent work, and the best of their respective kinds.

C. All concealed aluminum surfaces which will be in contact with concrete, plaster, lime, mortar, or other masonry materials, or with galvanic dissimilar metals, shall receive an approved heavy bodied bituminous paint or other approved isolating medium before delivery.

D. All aluminum shall be cleaned (after masonry work is cleaned) in accordance with the recommendations of the Architectural Aluminum Manufacturers' Association and shall be left in a complete and perfect condition.

E. Clean up premises of any refuse and such materials removed as part of this work. All removed material shall be disposed of OFF the site. Working areas shall be left broom clean.

3.04 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 08 56 30

STORM WINDOWS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all labor, materials, accessories, incidentals and the like necessary and/or required for the complete execution of storm windows and accessory work for all windows in Map Room 204 (27-2 through 31-2).

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 06 00 00 - Carpentry
B. 07 90 00 - Caulking and Sealing/Joint Sealants
C. 08 80 00 - Glass and Glazing
D. 09 90 00 - Painting

1.04 QUALITY ASSURANCE

A. All units furnished under this Section shall conform to "A" Quality Standards as defined by AAMA with basic window members fabricated from aluminum alloy shapes and sections.

B. All units furnished under this Section shall be made by a manufacturer who will be required to certify that he has been an established company engaged in the manufacturer and installation of aluminum units of the type and quality specified and required for this project for a period of 3 years and further; so issue to the Commissioner a list of project installations substantiating actual weatherability, exposure and usage.

C. Installation of work of this Section shall be performed by a Specialty Contractor under the direct supervision, and in accordance with the recommendations of the unit manufacturer, and further; it shall be the full responsibility of the Contractor to provide all materials fully processed, prefitted, prepunched, and the like, so that the unit, when assembled, shall fit the openings so as not to require any cutting, ripping or fitting on the site by the installation personnel.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop drawings showing complete detail of window assembly.
B. Sample window, full size for typical opening.
C. Test data showing water and air infiltration data information in format established by AAMA testing procedures.
D. Certification of Specification Compliance
E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 SPECIAL GUARANTEE/WARRANTY TERMS

A. The storm windows, window frames, extension frames, extruded trim and all closures shall be fully guaranteed by the window manufacturer for a period of 5 years after final acceptance in accordance with the Conditions.
B. All repair work within the Guarantee/warranty period must be performed on the project site by the Manufacturer or qualified representative. All such repairs and/or replacements, parts or labor shall be the total responsibility of the Manufacturer.
C. Guarantee/warranty MUST be issued by the manufacturer.

1.07 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.
   2. Water-soluble.
   3. Can be cleaned up with water.
   4. Non-flammable.
   5. Biodegradable.
   6. Low or preferably no Volatile Organic Compound (VOC) content.
   7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
   8. Manufactured without compounds that contribute to smog in the lower atmosphere.
   9. Do not contain methylene-chloride.
   10. Do not contain chlorinated hydrocarbons.
   11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 MANUFACTURE: All aluminum windows of the types and sizes shown in the plans and/or as called for in this specification shall be furnished with all necessary hardware, fasteners and miscellaneous equipment as herein specified and shall be manufactured by Allied Window, Inc. or approved equal conforming the following quality standards as described within these specifications.

A. Single Hung - Windows 28-2, 29-2 and 30-2
B. Fixed - Windows 27-2 and 31-2

2.02 MATERIALS: Aluminum shall be of commercial quality and of proper alloy for window construction free from defects impairing strength and durability. All straight extruded sections shall be of 6063-T5 alloy and temper and shall have a minimum ultimate tensile strength of 22,000 P.S.I. and a yield of 16,000 P.S.I.

2.03 WINDOW MEMBERS. All sash members shall be of extruded aluminum with a 3/8" x 1" dimension. All extrusions shall be of sufficient strength to perform as designed. Window members shall have a nominal wall thickness of not less than .062". All corner keys shall be of extruded aluminum. High-energy foam-backed magnetic tape shall be applied to jamb rails of removable panel/assembly.

2.04 FASTENERS. All screws and other miscellaneous fastening devices incorporated shall be zinc plated, cadmium plated or other non-corrosive metals compatible with aluminum.

2.05 HARDWARE/MAGNETIC SEAL. Head receptor to be extruded aluminum U-channel with dimensions of 1/2" x 5/8" and with nominal wall thickness of not less than .046". The magnetic seal is accomplished by the use of foam-backed steel tape applied to U-channel noted above.

2.06 WEATHERSTRIPPING.

A. Bottom rails of panel/assembly shall incorporate flexible "sillseal" weatherstripping.
B. Operating track jamb members shall be lined with pile weatherstripping similar and equal to Stan-pro #525-160.

2.07 ASSEMBLY. All windows shall be assembled in a secure and workmanlike manner. The master frame and insert frame(s) shall be of mitered head and sill. Frame rails and stiles shall be neatly joined together using extruded aluminum corner keys staked in place.

2.08 SASH.

A. The operable bottom sash shall be removable and be equipped with a full bottom rail lift handle. Heavy-duty spring-loaded latches shall be provided for variable sash positions for ventilation.
B. Fixed Sashs shall be removable and be equipped with a full bottom rail lift handle.

2.09 FINISH - The exposed surfaces of all aluminum members shall be clean and free from serious surface blemishes. Painted finish shall meet AAMA

603.6 custom color finish to be two-part polyurethane paint (air dried).

2.10 GLASS

A. Laminated glass in 3/16 inch thickness; shall be set in wrap-around glazing system with 5/16 inch minimum penetration.

B. Glass shall be held in place with removable and reusable vinyl glazing splines. Vinyl shall be manufactured from virgin polyvinyl chloride. All corners shall be neatly mitered.

2.11 SEALANT: Silicone as per Section 07 90 00.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 ANCHORAGES AND REINFORCING

A. All anchorages necessary for installation of work of this section shall be substantial, rustproof, and as approved on shop drawings.

B. All reinforcing required within frames, shall be provided as indicated or directed and as approved on the shop drawings.

3.03 PROTECTION AND CLEANING

A. The Contractor shall be responsible for protecting all work of this Section during construction and repairing any broken glass and cleaning such completion of the building.

B. Materials used to protect and clean work shall not be damaging to the work and adjacent work, and the of their respective kinds.

C. All aluminum shall be cleaned in accordance with the recommendations of the Architectural Aluminum Manufacturers' Association and shall be left in a complete and perfect condition.

3.04 DELIVERY, ERECTION AND ADJUSTMENT

A. All work shall be manufactured in ample time so as to not delay progress of the building. Furnish and maintain sufficient mechanics to erect work in such manner so as not impede the completion of the project.

B. Erection of all work shall be by experienced mechanics. Extreme care shall be taken and windows set plumb and square to provide proper contact. All work shall be weathertight.

C. All required weatherproofing thru use of color approved sealant as specified in Part 2 shall be accomplished as part of the work of this Section.

3.05 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

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SECTION 08 63 00

SKYLIGHTS, METAL FRAMED AND CUSTOM
(Translucent Assemblies)

Part 1 - GENERAL

1.01 Applicable provisions of the Conditions of the Contract and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the removal and complete replacement of the courtyard skylights for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Remove existing metal framed and wire glass glazed skylight and retain and refurbish existing curb.
2. Provide temporary protection at resultant opening in the form of fall protection both by railings and by platform. Existing skylight must not be removed until new unit is on site and ready for installation so as not to cause any disturbance to the interior of the building.
3. Provide new "ridge" type skylight system including all transition elements, fixed insulated glazing, closures, trim, cladding, accessories and the like to complete the work. The skylight shall consist of an assembly of two independent glazing panels of extruded cellular polycarbonate incorporated into a complete aluminum framed system that has been tested and warranted by the manufacturer as a single source system. The exterior panel shall be removeable at any time, independently of the interior panel and without exposing the building's interior. The interior panel remains intact for the life of the building envelope.
4. Provide as part of the overall skylight systems, a prefinished prefabricated insulated aluminum gutter system complete with scupper unit assemblies to tie into leaders furnished under Section 07 60 00.

Responsibility for free flowing drainage and watertightness of overall system shall be the that of this Specialty Contractor.

3. Provide formed prefinished metal closure plates and shapes as may be required to complete the work. Material shall be a minimum of 0.125 inch thickness and shall be "smooth".
4. Provide all required "treated" wood blocking, shimming and the like in connection with the work of this Section.
5. Furnish, for installation by other trades, all loose preformed, prefinished flashing materials in conjunction with this work.

6. Provide curb and flashing systems complete as required to provide support and to insure watertight installation.
7. Provide all accessories, cap flashings, trim, sealants and the like necessary and/or required to complete the work and to insure conformance to the guarantee/warranty requirements contained herein.
8. Provide balance of materials, labor and accessories required to complete the installation in conformance with the guarantee/warranty requirements contained herein.

NOTES:
1. All exposed metal work throughout, including skylight parts, closure plates, flashings, louvers and the like shall be clear anodized finished .
2. Glazing - See specification.
3. PROVIDE ISOLATION DEVICES (Strips or Bedding) BETWEEN ALL DISSIMILAR COMPONENTS.
4. Provide loose fiberglass fill insulation packing in ridges, corner caps and closures and elsewhere indicated and/or non-accessible after assembly and erection, coordinate with Section 09 29 00 for material.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:
A. 06 00 00 - Treated wood blocking systems and like rough carpentry items and restoration of existing curb.
B. 07 90 00 - Caulking and Sealing material requirements and installation restrictions

1.04 QUALITY ASSURANCE
A. Application of Skylight systems shall be coordinated with installation of roof insulation, metal and fabric flashings and all other similar items to provide a watertight installation.
B. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.
C. Skylight system must be evaluated and listed by recognized building code authorities: International Council Evaluation Service Inc (ICC-ES) and approved for use by the New York City Building Code.
D. Manufacturer Qualifications:
   1. Responsible for all components, including structural design.
   2. Continuously engaged in metal-framed skylight construction with a minimum of 3 years successful experience.
   3. Able to demonstrate successful performance on comparable projects.
   4. Responsible for engineering.
      a. Preparation of shop drawings.
      b. Development of testing program and interpretation of test results.
      c. Comprehensive engineering analysis by a qualified professional engineer.

E. Installer Qualifications:
   1. Minimum of 3 years successful experience in installation of similar skylights.
   2. Acceptable to manufacturer.

F. Professional Engineer Qualifications:
   1. Professional engineer licensed to practice in New York.
   2. Experienced in providing engineering services of kind indicated which has resulted in successful installation of metal-framed skylights similar in material, design, and extent to that indicated for this project.

G. Submit a list of a minimum of 3 completed projects of similar nature and scope, including project name, location, and architect.

H. Reference Standards
   1. AAMA Standard Specifications for Windows, Doors and Unit Skylight, 2005 edition - 101/I.S.2/A440. AAMA 501 - Methods of Test for Exterior Walls.
   2. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage.
   3. AAMA 503 - Field Testing of Metal Storefronts, Curtain Wall and Sloped Glazing Systems.
   4. AAMA 2605 - Superior Performing Organic Coatings on Aluminum Extrusions and Panels. ASTM B 209 (ASTM B 209M) - Aluminum and Aluminum-Alloy Sheet and Plate.
   5. ASTM B 211 (ASTM B 211M) - Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
   6. ASTM B 221 (ASTM B 221M) - Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
   7. ASTM C 719 - Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
   8. ASTM C 920 - Elastomeric Joint Sealants.
   9. ASTM E 283 - Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
   10. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
   11. ASTM E 331 - Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
   12. Canadian Standards Association (CSA)
   13. Window & Door Manufacturers Association (WDMA)
   14. International Code Council (ICC)
   15. AWS D1.2 - Structural Welding Code - Aluminum.
   16. NAAMM Metal Finishes Manual for Architectural and Metal Products.

I. Preinstallation Meeting: Convene a preinstallation meeting 2 weeks before start of installation of metal-framed skylights. Require attendance of parties directly affecting work of this section, including Contractor, Architect, installer, and manufacturer's representative. Review the following:
   1. Construction schedule.
   2. Coordination with other work.
   3. Condition of substrate.

4. Preparation for skylights.
5. Structural load limitations.
6. Skylight curb structural requirements.
7. Protection of adjacent roof areas.
8. Installation of skylights.
9. Field quality control.
10. Cleaning of skylights.
11. Protection of skylights.

J. Skylight assemblies shall meet the requirements of (all work of this section will be accomplished in strict conformance to applicable provisions of the governing code of the New York City Building Code, 2008 with all amendments thereto.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop drawings showing installation and construction details, types and locations of fasteners, flashing conditions and materials, special shapes and other critical conditions.
B. Wind and snow load calculations for each unit assembly prepared by a licensed Professional Engineer within the jurisdiction of this project following the data as established herein and as may be indicated on the Contract Documents.
C. Samples of all components of installations required herein.
D. Certification of specification compliance.
E. The manufacturer shall submit certified test reports made by an independent organization for each type and class of panel system. Reports shall verify that the material will meet all performance requirements of this specification. Previously completed test reports will be acceptable if they are indicative of products used on this project. Test reports required are:
   1. Self-Ignition Temperature per (ASTM 1929-3)
   2. Smoke Density per (ASTM D-2843)

3. Burning Extent per(ASTM D-635)
4. Interior Flame Spread per (ASTM E-84)
5. Color Difference per (ASTM D-2244-85)
6. Weathering (ASTM D-4364
7. Weathering Evaluation before and after 25 minute exposure to 300°F, for Light Transmission and Color Change, per ASTM E-1175, ASTM D-2244.
8. Large Missile Test - Impact Resistance per SFBC PA 201-94.
9. Impact loading per ASTM E 695.
10. Insulation "U" Factor per NFRC 100 for center of glass only
11. Solar Heat Gain Coefficient (SHGC) per methods and procedures given in the NFRC Calorimeter Standard. Independent Test Reports or calculations based on this test standard are acceptable.
12. Visible light Transmission (VT) per ASTM E972 & ASTM E1084.
13. Water Penetration per (ASTM E-331).
14. Load Bearing Capability per (ASTM E-330)
15. OSHA Life Safety Fall and Walk Through Protection for 300 lb. point load per STD 29 CFR 1910.23 (e)(8).
16. ICC evaluation service report for compliance with IBC building code as an approved light transmission plastic with a CC1 rating.

F. MAINTENANCE DATA: The manufacturer shall provide recommended maintenance procedures, schedule of maintenance and materials required or recommended for maintenance.

G. This Contractor shall take, where possible, all necessary field measurements prior to fabrication and shall verify same prior installation of work and shall assume complete responsibility for accuracy of same.

H. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 DESIGN CRITERIA

A. Live load, all units - 40 psf + dead, snow and wind loading as established by applicable portions of the prevailing building code and/or indicated on the drawings.

B. Snow loading as per code statement on Structural Drawings.

C. Deflection Limits:

1. Deflection in Direction Normal to Glazing Plane:
   a. Clear Span Less Than 20 Feet: Deflection of entire length of framing members in direction normal to glazing plane is limited to L/175 of clear span or 3/4 inch (19 mm), whichever is smaller, unless otherwise specified.
   b. Clear Span Greater Than 20 Feet: Deflection of entire length of framing members in direction normal to glazing plane is limited to L/240 of clear span or 3/4 inch (19 mm), whichever is smaller, unless otherwise specified.
2. Deflection in Direction Parallel to Glazing Plane: Deflection of framing members in a direction parallel to glazing plane, when carrying full dead load, is limited to

an amount not exceeding that which reduces glazing bite below 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch (3 mm).

D. Lateral Support: Compression flanges of flexural members are laterally braced by cross members with minimum depths equal to 50 percent of flexural member depth and by anchors to building structure. Glazing material does not provide lateral support.

E. Negative live load: 30 psf minimum, or as dictated by code and location of unit assembly.

F. Thermal expansion: Resistant to stress from 200 degrees F. (93.3 degrees C.) temperature shift.

G. Seismic Loads: As indicated on the drawings.

H. Light transmission: as per 2.02.C.

1.07 PROTECTION

A. Protect factory prefinished components from damage during shipping, erection and subsequent construction processes.

B. Protect all products and accessories from discoloration.

1.08 SPECIAL GUARANTEE/WARRANTY TERMS

A. Provide a single source skylight system manufacturer warranty against defective materials and fabrication. Submit manufacturer's written warranty agreeing to repair skylight system work, which fails in materials within one year years of the date of delivery. In addition, provide single source skylight's manufacturer 10 year glazing panel warranty. Third party warranty for glazing panels shall not be acceptable. Glazing warranty to include:

1. Change in light transmission of no more than 6% per ASTM D-1003
2. No delamination of panel affecting appearance, performance or structural integrity of the panel or the system.
3. Thermal aging - the light transmission and the color shall not change after exposure to heat of 300°F for 25 minutes. (When measured per ASTM D-1003 and ASTM D-2244 respectively).

B. In addition submit installer's written warranty agreeing to repair installation workmanship, defects and leaks within one year of the date of installation.

Part 2 - PRODUCTS

2.01 SPECIFICATION STANDARD: For the purpose of establishing standards of quality and levels of performance and not for the purposes of limiting competition, the basis of this Specification is upon custom designed unit assemblies as manufactured by one of the following. Products submitted as equals to the following shall meet, in a line by line comparison, all performance and construction characteristics stated.

A. CPI Daylighting, Inc.Kalwall Corporation

C. Major Industries

Or approved equal.

2.02 TRANSLUCENT PANEL PERFORMANCE

A. Panel Technology - Longevity and Resistance to Buckling and Pressure

1. Translucent Panels must be configured with Nano-Cell technology. Wide Cell technology (cell size exceeding 0.18") shall not be acceptable.
2. The translucent panel shall include an integral extruded Nano-Cell structural core. The exterior skins of the panel shall be connected with supporting continuous ribs, perpendicular to the skins, at a spacing not to exceed 0.18" (truss-like construction). In addition, the space between the two exterior skins shall be divided by multiple parallel horizontal surfaces, at a spacing not to exceed 0.18".

B. Translucent Skylight-Two Panel Assembly and Appearance:

1. Design, engineer, manufacture and install a two panel assembly, translucent insulating Skylight system. Skylights shall be an assembly of two independent extruded polycarbonate glazing panels incorporated into a complete aluminum framed system that has been tested and warranted by the manufacturer as a single source system.
2. The overall thickness of the two panel assemblies shall be a minimum 2.75" system with concealed interlocking H battens or 4" system with concealed interlocking H battens. Minimum thickness of the exterior panel shall be 0.39" and minimum thickness of the interior panel shall be 0.315".
3. The panel width shall not exceed 2' to ensure best performance for wind uplift, vibration, oil canning and visual appearance. Panels over 2' wide will not be approved.

C. Thermal and Solar Performance:

1. Insulation Value ("U") per NFRC 100 test methods & procedures center of glass: 0.31.
2. Visible Light Transmission (VT .%) .55 (in)/.40 (out) per ASTM E972, E1175.
3. Solar Heat Gain Coefficient (SHGC) 0.243 independently tested or calculated based on testing per methods and procedures given in the NFRC Calorimeter Standard.
4. Color: 644/583

D. Translucent Panel Joint System:

1. The glazing panels shall be extruded in one single formable length. Transverse connections are not acceptable.
2. The panels shall be manufactured with grip-lock double tooth up stands that are integral to the unit. The up stands shall be 90 degrees to the panel face (standing seam dry glazed concept). Welding or gluing of the up stands or standing seam connections is not acceptable.
3. The H batten connections shall have a grip-lock double tooth locking mechanism to ensure maximum uplift capability.
4. The metal retention clip shall be configured with a 0.4" wide top flange that extends continuously across the clip from end to end and from side to side.

5. To allow a safety factor, the retention clip must be tested to meet a wind uplift standard of 90 psf per ASTM E-330
6. Water Penetration: There shall be no water penetration along the length of the H joint panel connection at a test pressure of 6.24 PSF per ASTM E-331
7. The panel connection shall be dry-glazed, allowing free movement of the panels without damage to the weather tightness of the completed system.

E. Flammability:
1. The exterior and interior panels shall be rated as approved light transmitting plastics with a CC1 fire rating classification per ASTM D-635, with a flame spread rating no greater than 25 per ASTM E-84 and a smoke density rating no greater than 75 per ASTM D2843 and a minimum self-ignition temperature of 1000°F per ASTM 1929. The panel shall be self-extinguishing.
2. All glazing panels shall have an interior flame spread classification of Class I (or Class A) per ASTM E84.
3. The standard Quadwall® configuration shall be rated Class C per ASTM E108, FM 4470, NFPA 256, UBC 32-7, ULC-S107, UL 790 roof construction.

F. Impact Resistance: The panels shall meet the following test requirements:
1. Impact loading per ASTM E 695 for 500 ft. - lbs.
2. Impact resistance of 350 ft. lbs. per SFBC - PA 201-94.
3. impact resistance per ASTM 1886 & ASTM E1996 missile level D

G. OSHA: The panel assembly shall withstand a 300 lb. point load at a 5' span per OSHA Life Safety standard 29 CFR 1926.502 (i)(2) and 29 CFR 1910.23 (e)(8).

H. Cyclic Wind Load: Translucent Panels shall be tested for cyclic wind loads and impact resistance per ASTM E-1886 and ASTM E-1996 at test load to verify positive and negative design load performance and level D impact resistance.

I. Weatherability:
1. The light transmission as measured by ASTM D1003, shall not decrease more than 6% over 10 years, or after exposure to temperature of 300°F for 25 minutes (thermal aging).
2. The panel shall be tested by recognized laboratory for weathering evaluation per ASTM D4364-84 (EMMAQUA, UNBACKED), after exposure to minimum concentrated natural sunlight radiation of 56000 MJ/M^2 (1540 MJ/M^2 of UV, 200 - 385 N.M). The panel shall not change in color more than 4.0 units Delta E, 4.0 units Delta L and Delta B.
3. The panel shall not change color more than 4.0 units (DELTA-E by ASTM D2244) after 60 months outdoor weathering in Arizona determined by an average of at least two samples.
4. Thermal aging - the interior and exterior faces shall not change color in excess of 0.75 Delta E by ASTM D2244 and shall not darken more than 0.3 units (Delta L by ASTM D2244) and shall not show cracking or crazing when exposed to 300°F for 25 minutes.

5. The faces shall not become readily detached when exposed to temp of 300°F and 0°F for 25 minutes.
6. Panels shall consist of a polycarbonate resin with a permanent, co-extruded, ultra-violet protective layer. Post-applied coating or films of dissimilar materials are unacceptable. Fiberglass skins are unacceptable.
7. UV Maintenance: The system shall require no scheduled re-coating to maintain its performance or for UV protection.
8. Panel shall be factory sealed at the sill to restrict dirt ingress.

2.03 METAL FRAME STRUCTURE

A. The Skylight framing shall be designed to be self-supporting between the support constructions. The deflection of the structural framing members in a direction normal to the plane of the glazing, when subjected to a uniform load deflection, shall not exceed L/60 for the unsupported span. The skylights will impose reactions to the support construction. All adjacent and support construction must support the transfer of all loads, both horizontal and vertical, exerted by the skylights.

B. Water Penetration: The Metal Framed Skylight shall allow no water penetration at a minimum differential static pressure of 6.24 lbs. per sq. ft. per AAMA 501 Pressure Difference Recommendations. This shall be demonstrated by prior testing of a typical framing sample per ASTM E-331 test standards.

C. Water Penetration testing of the Metal Frame Structure shall be conducted according to procedures in AAMA 501.2.

2.04 METAL MATERIALS

A. Extruded Aluminum shall be ANSI/ASTM B221; 6063-T6: 6063-T5 or 6005-T5.

B. Flashing:

1. Sheet metal flashing shall be 5005 H34 aluminum with 0.04" minimum thickness.
2. Sheet metal flashings/closures/claddings shall be furnished shop formed to profile - when lengths exceed 10 ft. in nominal 10-ft lengths. Field trimming of the flashing and field forming the ends is necessary to suit as-built conditions. Sheet metal ends are to overlap at least 6-in. to 8-in., set in a full bed of sealant and riveted if required.

C. All Fasteners for the aluminum framing shall be stainless steel or cadmium plated steel, excluding fasteners used for final connection to the building.

D. All exposed ALUMINUM FINISH shall be Clear Anodized.

2.05 Balance of materials shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of

this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 ERECTION

A. The skylight and its' flashings shall be completely erected and glazed by the manufacturer or his authorized representative. The work shall be done in accordance with the standards set forth by the manufacturer.

B. Contacts between aluminum and dissimilar materials shall receive a protective coating for prevention of electrolytic action and corrosion.

C. Sealant material shall conform to those specified in Section 07 90 00 for Type II (Silicone) and shall be applied as per manufacturer's instructions.

3.03 FIELD QUALITY CONTROL

A. Testing Agency: The City of New York will engage a qualified independent testing agency to perform field quality control tests and to prepare test reports.

B. Sealant Adhesion Tests:
   1. Test Installed Sealant: Minimum of 2 areas.
   2. Structural Silicone Sealant Test: AAMA CW 13, field adhesion test method.
   3. Weatherseal Sealant Test: Sealant manufacturer's instructions.

C. Skylight Water Spray Test: AAMA 501.2.

D. Skylight Air Infiltration Test: AAMA 503 and ASTM E 1105.
   1. Static Air Pressure Differential: 1.57 pounds per square foot (75 Pa) minimum.
   2. Air Leakage: 0.06 cfm per square foot (0.03 $L/s/m^2$) of surface maximum.

E. Skylight Water Penetration Test: AAMA 503 and ASTM E 783. Uniform Static Air Pressure Differential: 20 percent of positive design wind load, with 6.24 pounds per square foot (300 Pa) minimum.

F. Repair or replace skylight components that do not meet specified requirements or that are damaged by testing. Retest repaired and replaced components.

3.04 CLEANING

A. Clean all surfaces free from paint, grease, labels and other items using material non-incursive to the finish and in strict accordance with manufacturers' instructions.

B. Follow manufacturer's instructions when washing down exposed panel surfaces using a solution of mild detergent in warm water that is applied with soft, clean wiping cloths.

C. Strictly follow panel manufacturer guidelines when removing foreign substances from panel surfaces requiring mineral spirits or any solvents that are acceptable for use. Always test a small

sample to validate compliance before applying to the skylight glazing panels

D. Installers shall leave the panel system clean at completion of installation. Final cleaning shall be done by others upon completion of project, following manufacturer's cleaning instructions.

3.05 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

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SECTION 08 80 00

GLASS AND GLAZING

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all glass and glazing work of this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Material requirements and labor restrictions are established herein for work specified in Section 08 51 10.
2. Repair or remove smaller skylight openings at lower roof (Flushing Avenue side).
3. Provide framed mirror systems as required. Coordinate with Section 10 28 00.
4. Provide "opaque" film on inside of toilet room window.
5. Perform balance of glazing as may be required by the Drawings and these specifications to complete the glazing requirements of this project.

NOTES: Safety Glazing is required by Code

1. Wherever glazing or any portion of glazing is within 18 inches of a floor or platform riser level.
2. 'Safety Glazing' to be at least 1/4 inch thick 'fully tempered' or 'laminated' glass.
3. Safety Glazing is to bear the certification label of the 'Safety Glazing Certification Council' or another certification agency acceptable to agencies having jurisdiction.
4. Safety Glazing shall further comply with the "Code of Federal Regulations Part 16, CFR 1201" or (AKA) "CPSC 16 CFR 1201" entitled "Safety Standard for Architectural Glazing Materials".

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above.

1.04 QUALITY ASSURANCE

A. All work of this section shall be in accordance with general industry practice governing glass and glazing and shall be accomplished in accordance with the requirements of the Manual of the Glass Association of North America (GANA) and Sealed Insulation Glass Manufacturers Association,, latest editions, for the surrounds specified and required.

B. All glazing products shall be labeled as to thickness and type and

said labels shall be left in place for inspection until directed to remove same.

C. Reference Standards (Flat Glass Industry Specifications)

1.	ASTM C 1036-01	Standard Specification for Flat Glass
2.	ASTM C 1048-04	Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass
3.	ASTM E 2190-02	Standard Specification for Insulating Glass Unit Performance and Evaluation
4.	ANSI Z97.1-04	American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications Method of Test
5.	AAMA	Sealants Manual
6.	GANA	Glazing Manual and Sealant Manual
7.	SIGMA	Sealed Insulating Glass Manufacturers Association
8.	ASCE 7	Minimum Design Loads for Buildings and Other Structures
9.	ASTM C 509	Specification for Cellular Elastomeric Pre-Formed Gasket and Sealing Material
10.	ASTM C 794	Test Methods for Adhesion in Peel of Elastomeric Joint Sealants
11.	ASTM C 864	Specification for dense elastomeric compression seal gaskets, setting blocks and spacers
12.	ASTM D 395	Standard test method for rubber property - Compression set
13.	ASTM D 746	Standard test method for brittleness temperature of plastics and elastomers by impact
14.	ASTM D 865	Standard test method for rubber - Deterioration by drying in air (test tube enclosure)
15.	ASTM D 897	Tensile testing of adhesive bonds
16.	ASTM D 2240	Standard test method for rubber property - Durometer hardness
17.	ASTM E 546	Test for dew point of sealed insulating glass units
18.	ASTM E 773	Standard test methods for seal durability of sealed insulating glass units
19.	ASTM E 774	Standard specification for sealed insulating glass units
20.	ASTM 1332	Standard Classification for Determination of Outdoor-Indoor Transmission Class
21.	ASTM C 920	Standard specification for elastomeric joint sealants
22.	ASTM C 1087	Standard test method for determining compatibility of liquid-applied sealants with accessories used in structural

glazing systems.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Product Data - Manufacturer's specifications and installation instructions for each type of glass specified herein:
   1. Spacers.
   2. Compressible filler rod.
   3. Mastics/primers and the like.

B. Samples
   1. Glass: 12 inch by 12 inch pieces for each type of glass specified herein.
   2. Setting blocks, full size.
   3. Opaque film: 12 inch square piece with 2 ounces of adhesive.

C. Quality Control Submittals
   1. Test Reports: Certified test data to sufficiently substantiate glass or glass assembly compliance with requirements specified.
   2. Sealant Compatibility Reports: In accordance with ASTM C1087 including rubber glazing to glass and glazing sealants. Include sealant compatibility between sealant, glazing components, and aluminum frame finish. Reports shall address both chemical and adhesion compatibility issues.
   3. Submit reports for all quality control tests of shop assembled units.

D. Certification of Specification Compliance:
   1. Affidavit by the material supplier, certifying type and quality of glass furnished.

E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All glazing materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer, color and/or other pertinent characteristics.

B. Materials shall be stored under conditions recommended by the manufacturer.

C. All measurements and sizes for the work shall be obtained and verified by the Contractor who shall be responsible for correct and accurate fitting of his work.

D. Glazing molds shall be removed and replaced in their correct locations in such a manner as not to mar moulding or the screws securing same.

1.07 MANUFACTURER GUARANTEE/WARRANTY TERMS

A. Provide written warranty agreeing to repair or replace defective materials and workmanship during warranty period. Defective materials and workmanship include, but are not limited to: Failure as described in Performance Requirements.

B. Warranty does not include damage caused by vandalism, or natural conditions exceeding the performance requirements. Warranty and its enforcement shall not deprive City of New York of other action, right or remedy.

C. Manufacture warranty period for glass and glazing shall be ten (10) years from date of substantial completion.

D. Provide an extended 5 year guarantee/warranty against desilvering of mirrors or delamination of backing on safety glass.

E. System warranties includes materials, labor and access.

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. Furnish all glass and glazing materials in accordance with the schedules and/or details shown on the contract drawings and in conformance with the following specifications.

B. The basis of this specification is upon "Solarban 60" by PPG Industries for all exterior glazing other than that used in entrance doors and companion sidelights which shall be clear/clear insulated and tempered assemblies. Color is a prime consideration.

Visible Light Transmission	U-Value Winter	U-Value Summer	SHGC	Shading Coefficient	Outdoor Visible Light Reflectance
70%	0.29	0.27	0.38	0.44	11%

1. PPG Industries/J.E. Berkowitz
2. Viracon
3. Guardian Industries Corporation
4. AGC Flat Glass North America
5. Pilkington North America.

or approved equal conforming to the general guidelines outlined in ASTM C 1036 for flat glass and C 1048 for heat treated glass and E 2188, 2189 and 2190 for sealed insulating glass units..

2.02 INSULATING GLASS

A. Units shall be "dual seal" hermetically sealed with a primary butyl rubber, PIB or polyisbutylene and secondary seal of polysulfide or silicone sealant as may be standard with the manufacturer and compatible with glazing materials to be used in setting of glass as specified in Section 08 51 10.

B. Individual lites shall be separated by a roll formed stainless steel or aluminum spacer filled with a low moisture absorbing desiccant similar and equal to "AZON" Clear. Corners of spacer shall be fused, welded or bent as standard with the manufacturer. Spacer welds or solder shall not protrude above spacer surface. Welds and solder joints shall be solid and free of pin holes.

C. Units shall be certified by the Insulating Glass Certification Council (IGCC) and shall have the IGCC label and "A" classification permanently etched in the corner of each of the insulating units used.

D. Shading coeficient for all exterior insulated glass = 0.40

E. Units shall not contain breather or capillary tubes or similar penetrations.

F. A dew/frost point above -20°F shall constitute seal failure.

2.03 FLOAT GLASS

A. Monolithic annealed glass, "select" quality and thickness required.

2.04 SAFETY GLAZING

A. Tempered float glazing, reference ASTM C 1048.

1. All glass to be of "glazing" quality and in the case of

insulated assemblies, coated with low emissive coating system on #2 surface of assembled panel.

2. Glass shall be heat-treated by horizontal (roller Hearth) process with inherent roller-wave distortion pattern parallel to the bottom edge of the glass as installed.
3. Flatness Tolerances:
   a. Roller-Wave or Ripple: The deviation from flatness at any peak shall not exceed 0.003 inches as measured per peak to valley for 1/4 inch (6mm) thick glass. Electronic readout per lite is requird as a submittal confirming this fabrication tolerance.
   b. Bow and Warp: The bow and warp tolerences shall not exceed 1/32 inch per linear foot.

B. Wire glass classified as per ASTM C 1036, Type II
1. Class 1 - Translucent
2. Form 1 - polished both sides.
3. Quality - "q^8", glazing.
4. Mesh - "m^1"

C. Laminated safety:
1. Minimum 1/4 inch material "standard" with 2 lights of clear float laminated with 0.060 inch PVB interlayer. It is the Contractor's responsibility to provide engineering confirmation of deflection criteria conforming to L/650 or 200 psf point loading with a design factor of 2.5.

2.05 MIRRORS

A. Standard units - 1/4 inch float "silvering" quality glass with electrolitic application of copper to provide first quality distortion free mirrors. Products shall conform to ASTM C 1503-01.
Where frameless, all mirror edges shall be ground and polished to a 45 degree bevel. Apply water-resistant paint to rear side of units prior to setting.

B. Safety units - mirrors for all areas where same are within 18 inches of the floor or where accessible shall be as for "A" above and shall receive a Category II Tape Backing which shall conform to CPSC #16cfr1201 for safety glazing requirements. Units shall be as fabricated by Binswanger Mirror Products or other certified manufacturer.

C. Mirrors shall be framed and set with mated clip fasteners.

2.06 OPAQUE WINDOW FILM

A. 3M Brand "Fasara Transparent/Opaque 2 - Frost/Mat" or equal by Madico or Johnson

B. Film Type Polyester

C. Shading Coefficient (%) 0.94

D. Usage Interior - Visible Light Reflectance (%) 9; Visible Light Transmittance (%) 84

2.07 GLAZING ACCESSORIES

A. Gaskets: Closed cell, extruded neoprene, "epdm" or silicone rubber. Exterior seals shall be "soft"; interior seals "hard".

Extrusions shall be black in color. Corners shall be either vulcanized or premoulded at option of this Contractor. Size, cross section, packaging, corner conditions, etc. shall be determined by the supplier of the retaining sections and the installer of the glass.

B. Glazing Tape - 100% polybutene base material, non-skinning, non-drying, non-oxidizing, extruded of thickness 1/16 inch larger than opening and of sufficient width to provide contact at channel base or bead and finish flush with sight line. Manufacturers - Pecora, Tremco, 3M or approved equal.

C. Wet Sealants, surrounds - Acrylic terpolymer, 2 part polysulfide, single component polyurethane, butyl rubber or silicone type sealants judged and certified compatible with edge sealants on sealed units and with glazing surrounds.

D. Setting and edge blocks - Shore "A" hardness of 85 +/- 5; material shall be adjudged compatible with secondary seal of insulated glass or in case of single light, neoprene or "epdm". Spacer blocks - as above, Shore "A" of 50 +/- 5. Blocks and spacers shall comply with requirements of AAMA 501.1-94.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION

A. All glass and glazing products shall be set in accordance with the applicable setting guides of the "GANA" or "SIGMA" referenced in Paragraph 1.04.C above and as per requirements established by respective window/wall/door manufacturers in the referenced sections.

B. Surfaces shall be dry and free from dust, rust or ice before glazing. Dirty surfaces shall be cleaned with cloth saturated with turpentine or mineral spirits before glazing.

C. All sash settings shall be installed in longest practical length. Splices shall be made at joints in glass or as required. All joints shall be butt, anchored and sealed as per manufacturers recommendations.

D. Keep the glazing rabbet clean and dry during installation of glass.

E. Do not glaze units when ambient air temperature is below 40°F and in presence of any moisture.

3.03 NON-STRUCTURAL GLAZING

A. Refer to Section 08 51 10 for general aluminum framing requirements.

B. Comply with all general glazing requirements.

3.04 REPLACEMENT AND CLEANING

A. All cracked, broken, scratched, stained or otherwise damaged glass and all glazing improperly set shall be replaced with perfect glass, properly set at no additional cost to the City of New York.

B. Clean glass both sides after painting is complete and dry. Do not disturb glazing with scrapers. Do not use acid solution or water containing caustic soap.

C. At the time of final acceptance of the work, all glass shall be clean and undamaged and all setting materials in perfect condition.

3.05 WASTE MANAGEMENT

A. Separate float glass and place in designated areas for reuse or recycling (cannot be recycled with beverage-container glass).

B. Separate tempered glass for use as aggregate or nonstructural fill.

C. Separate corrugated cardboard in accordance with the Waste Management Plan and place in designated areas for recycling.

End of Section

SECTION 08 90 00

LOUVERS AND VENTS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of louver and vent work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide all louver systems to the extent indicated on the drawings
2. Provide new ventilation louvers at areaways on Flushing Avenue; coordinate with Division 23, HVAC.
3. Provide new louver assembly on the Little Nassau Street façade at opening 46; coordinate with Division 23..
4. Provide new louvers in connection with new windows in Map Room 204.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. HVAC Specialty Contractor shall provide minimum 20 gauge sheet metal blank off panels for all unused louver areas. unused louver areas, for the purpose of this Contract, shall be deemed to be all louver areas not enjoined or connected to an active plenum. In addition, exterior/visible face of blank off panel shall be cleaned and painted flat black by the HVAC Contractor, prior to installation. Screw panels to louver blades and caulk/seal to provide a weathertight seal.

1.04 QUALITY ASSURANCE

A. Performance Requirements: Provide AMCA and BSRIA test data as required to confirm that the louvers have the specified air and water performance characteristics.

B. Acoustical Performance: Where applicable, submit test reports to confirm that the louvers meet the specified STC and Noise Reduction requirements.

C. Structural Requirements: Design all materials to withstand wind and snow loads as required by the applicable building code. Maximum allowable deflection for the louver structural members to be 1/180 or 0.75 inch, whichever is less.

D. Maximum allowable deflection for the louver blades to be 1/120 or 0.50 inch across the weak axis, whichever is less.

E. Professional Engineer Requirements: Drawings and structural calculations to be signed and sealed by a professional engineer licensed to practice in the jurisdiction of the work.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Where applicable, Contractor shall take all necessary field measurements prior to fabrication and shall assume complete responsibility for accuracy of same.
B. Material Safety Data Sheet (MSDS) must be submitted for each m product.
C. Product Data
    1. Air flow and water entrainment performance test results.
    2. Material types and thickness.
D. Shop Drawings
    1. Include elevations, sections and specific details for each louver.
    2. Show anchorage details and connections for all component parts.
    3. Include signed and sealed structural calculations.
E. Samples
F. Submit color chips for approval.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer, color and/or other pertinent characteristics.
B. Materials shall be stored under conditions recommended by the manufacturer.

1.07 REFERENCE STANDARDS

A. Air Movement and Control Association International, Inc.
    1. AMCA Standard 500-L-99 Laboratory Methods of Testing Louvers for Rating
    2. AMCA Publication 501 Application Manual for Louvers
B. The Aluminum Association Incorporated
    1. Aluminum Standards and Data
    2. Specifications and Guidelines for Aluminum Structures

C. American Society of Civil Engineers
   1. Minimum Design Loads for Buildings and Other Structures
D. American Society for Testing and Materials
   1. ASTM B 209
   2. ASTM B 211
   3. ASTM B 221
   4. ASTM E 90-90
E. Architectural Aluminum Manufacturers Association
   1. AAMA 800 Voluntary Specifications and Test Methods for Sealants
   2. AAMA 605.2 Voluntary Specification for High Performance Organic Coatings on Aluminum Extrusions and Panels.
   3. AAMA TIR Metal Curtain Wall Fasteners
   4. AAMA 2605-98 Superior Performing Organic Coatings on Aluminum Extrusions and Panels

Part 2 - PRODUCTS

2.01 LOUVERS
A. Style and design shall be as indicated on the Drawings and shall generally be manufactured by one of the following -
   1. Construction Specialties (Models - 4100/thinline for Map Room 204)
   2. Airolite
   3. Safe.air/Dowco

   and shall be complete with all accessories including bird screens, frames, sills and all required accessories.
B. Louver design - Stormproof; Free air requirements - 50 percent

2.02 FINISH - Clear Anodized as per Section 08 51 10

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE
A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION
A. Units shall be installed true to line and level by the manufacturer or his authorized representative in accordance with approved shop drawings.

3.03 CLEANUP AND PROTECTION
A. Protect all adjacent work and finished surfaces from damage caused by the installation of the work of this Section.
B. Damage caused by the handling, storing or installation of the work herein, or failure to provide adequate protection of surrounding areas shall be repaired or replaced at no additional cost to the City of New York.
C. All debris resulting from construction operations will be removed

daily and upon final completion, all operating parts will be cleaned and protection removed.

3.04 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 09 24 00

PORTLAND CEMENT PLASTER
(Stucco)

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all portland cement plaster work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Coordinate with Section 04 01 00 for removal of existing corrugated metal panels and preparation of existing substrate to receive new stucco finish.
2. Extend work to existing courtyard wall elevations where cast iron treatments are removed and where masonry has be disturbed for structural reinforcing.
3. Perform stucco operation on existing and new CMU infills on exteriors and interior operations as required to patch, match and or continue finishes within the building.
4. Balance of furring, lathing and plaster work as may be required by the finish schedules and conditions of construction.

Note: The Commissioner reserves the right to order any area removed to the base construction and replaced properly at no cost to the Commissioner if deemed unsatisfactory as to finish, color or buildup application.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.

B. Materials and installation not otherwise specified herein shall be in accordance with the latest edition of the following standards:

1. American National Standards Institute (ANSI) A 42.2, Portland Cement and Portland Cement-Lime Plastering.
2. Metal Lath Association (MLA) Specifications for Metal Lathing and Furring
3. "Red Book of Lathing & Plastering" as published by the United States Gypsum Company.

C. ASTM & Code Standards: ASTM C1063, CE 240.01 (exterior), ASTM C926, UBC, ML/SFA-920, the International Code Council IBC and IRC. All Expanded Metal Lath Accessories are fabricated from prime

galvanized steel G60 zinc coating by the hot dipped method, conforming to steel and coating specification ASTM A-653/A-653M or zinc alloy meeting ASTM B-69 as required in ASTM C1063 and C847.

D. Install all work of this Section to conform to the applicable Building Code of the jurisdiction in which the work is to be accomplished.

E. Where applicable, all work of this section shall comply to the fire resistance ratings listed by Underwriters' Laboratories (UL) for the type of construction required.

F. The work of this Section shall be accomplished by a "Specialty Contractor" as defined in the Conditions.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. 12 inch linear or square pieces of all materials, accessories and the like as directed.

B. Mix materials, one pound each component.

C. Certification of specification compliance.

D. Provide, on suitable material, color and texture samples for approval by the Commissioner. Samples shall be 18 inches by 24 inches and shall be provided in a minimum of 3 trial mixes and textures to enable the Commissioner to make a selection. Where systems are to be "colored", said panels shall be constructed using approved colors.

E. Construct at designated location 3 foot by 5 foot sample panels (max. 3) showing: Base construction, sheathing and attachment; jointing, both vertical and horizontal; thickness and finish in stages. Same shall serve as a standard for all work. At least one panel shall be constructed for each condition to be encountered.

F. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver manufactured materials in original unopened packages or containers, with manufacturer's label intact and legible.

B. Keep cement, aggregates and lime dry, store cement, lime, lath, and lathing accessories off ground, under cover, and away from damp surfaces.

C. Remove wet, deteriorated and damaged materials from project site.

1.07 REQUIREMENTS AND RESTRICTIONS

A. Cold Weather Placement

1. Do not use frozen materials in plaster mixes.
2. Do not apply plaster to frozen surfaces or surfaces containing frost.
3. Do not apply plaster when ambient temperature is less than 40 degrees F.

B. During hot weather placement, protect plaster from uneven and excessive evaporation of moisture.

C. Plaster work shall be applied to a maximum deviation from true plane 1/8 inch (3 mm) in 10 feet (3.05 M) as measured by straight edge placed at any location on surface.

D. Horizontal plaster support system shall limit deflection of finished ceilings/soffits to less than 1/360 of span.

1.08 SPECIAL GUARANTEE/WARRANTY TERMS

A. The Contractor shall guarantee the work of this Section for a period of 1 year from the date of final acceptance in accordance with the General Conditions.

B. The guarantee shall extend to all cracking deemed as faulty application of plaster, lath or lathing accessories. Should replacement be required, contractor shall remove all material to and including lath and replace same.

1.09 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 ACCESSORIES

A. Control and Expansion Joints: #15, zinc, with spacer arrangement as required. NO MATERIAL SHALL EXCEED 26 gauge.

B. Corner Beads: Expansion type, #2A, 26 gauge zinc.

C. Strip Lath at corners.

D. Casing Beads: No. 66, square edge, expansion type, 24 gauge galvanized or zinc.

E. Provide #7 Foundation sill screed to allow trapped moister or water to drain to the exterior of the building. The #7 style screed is manufactured in compliance with ASTM standards and has the minimum requirement of 26 gauge G60 zinc coated steel and a 3-1/2" solid nailing flange.

F. All other trim pieces as shown and required not exceeding 26 gauge, zinc.

G. All accessory items including drips, screeds, vents and the like shall be of standard manufacture by U.S. Gypsum, Inryco, Superior, Keene or approved equal.

2.02 LATH

A. Apply V-Groove SF Paper-Backed (APB) Lath which is a Galvanized Expanded Steel Plaster/Stucco Base (3.4 #/sq.yd.). Material is a self furring expanded V-grooved metal lath with a Grade D Breather sheet spot attached. The V-groove self-furring plaster base is manufactured with evenly spaced indentations, 6" apart which run the length of the lath sheet holding 50% of the metal lath ¼" away from the solid surface. The asphalt paper-backed breather sheet meets Federal Specification UUB790A; Type 1, Grade D, Style 2 and is printed on the face of the paper for easy identification..

2.03 FURRING AND RUNNER CHANNELS shall be either hot or cold-rolled steel of the sizes best suited for intended usage and shall have the following minimum weights per thousand lineal feet.

Size	Hot Rolled	Cold Rolled
3/4"	300	300
1"	410	
1-1/2"	1120	475
2"	1260	

OR, the Contractor may, at his option, substitute standard galvanized furring systems in/lieu/of channels as above.

2.04 FASTENERS - Staples or nails of sizes and types applicable for intended use; wire, #12 gauge.

2.05 FELT STRIPPING - 15 lb. asphalt saturated felt, ASTM C 460.

2.06 PORTLAND CEMENT - ASTM C 150, Type 1

2.07 AGGREGATES - Clean sharp sand, ASTM C 35

2.08 WATER - Clean and Potable

2.09 LIME - Prepared conforming to ASTM C 207, Type S with 8% unhydrated oxides added and to requirements of National Lime Association, Type S.

2.10 MIX PROPORTIONS - Cement Plaster

A. Scratch Coat: 1 sack Portland Cement (94 lbs.), 2 sacks prepared masons lime (100 lbs.), 7-1/2 cubic. ft. sand, prepared selected jute fiber OR acid resistant glass fiber "shorts" at the equivalent of 1 lb./sq.yd.

B. Brown Coat: 1 sack Portland Cement (94 lbs.), 2 sacks prepared masons lime (100 lbs.), 9 cubic. ft. sand.

C. Finish - Standard mix.

D. Adequate water shall be added to mixes to insure proper consistency and workability.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 FURRING AND LATHING

A. Over plywood backer system provided under Section 06 00 00, apply at all accessory and joint assemblies a full covering of Tyvek type house wrap with taped joints.

B. Over restored masonry/cement parged backup, provide a sprayed on air barrier similar and equal to "Enershield 1" by BASF at recommended rate for backup encountered.

C. Install, with approved staples, wire ties, or other approved means, specified wire lath subbase with edges and sides lapped one inch. ALL LATH SHALL BE DISCONTINUOUS AT EXPANSION AND CONTROL JOINTS.

D. Install, in pattern shown, but in no case exceeding 10 foot by 10 foot centers each way, expansion and control joint assemblies. Joints less than one inch wide shall be wired to lath. Joints exceeding one inch shall be built-up assemblies and shall be fastened through slide plate directly to base. All beads, drips, screeds and the like shall be wired to base lath, and if of wing type, to solid construction. Coordinate and align stucco joints to backup joints as applicable.

3.03 APPLICATIONS

A. Apply scratch coat with sufficient pressure to insure thorough keys on metal lath to a thickness of 3/8 inch measured from back of lath and then cross rake. WATER CURE BEFORE APPLICATION OF BROWN.

B. Apply brown to a true surface with rod and darby without use of additional water. WATER CURE BEFORE APPLICATION OF FINISH.

C. Apply premix finish coat over watersprayed portland cement base system. After spraying and before application of finish, remove all loose and projecting particles from base and apply a thin coat of finish well ground into and completely covering base, double back and fill out at a uniform rate to minimum 1/8 inch thickness. Areas between joints shall be covered in one operation so as to eliminate joinings. Trowel surface 3 or 4 times prior to finishing. SURFACE FINISH SHALL MATCH APPROVED SAMPLE PANELS. All finish coats shall be applied in a one coat operation.

D. Curing shall be accomplished through fog spraying for sufficient time so as to cure the finish and to prevent glazed spots and "bloom". Apply as much water as is readily absorbed.

E. Overall thickness of Portland Cement Plaster shall be not less than 3/4 inch nor more than 7/8 inch from back of lath to face of finish.

3.04 PROTECTION

A. Protect finished work from plaster droppings and damage. Protect adjacent work and remove droppings and spills immediately. Damage caused by the handling, storing, mixing or application of materials or the failure to provide adequate protection shall be repaired or replaced at no additional cost to the City of New York.

3.05 ACCEPTANCE AND PATCHING

A. Plaster with cracks, blisters, pits, checks or discolorations will not be accepted.

B. After all other trades have finished their work, patch plaster rake out and point up around trim, frames, ducts, grilles, and other work and leave work in ready condition for decorating as applicable.

C. On completion of work, scaffolding equipment and rubbish resulting from the work of this section shall be removed from the premises. Leave work clean, whole, and sound ready for additional finish or sealing as specified and/or as shown on the drawings.

3.06 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 09 29 00

GYPSUM DRYWALL

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all gypsum drywall cladding, stud framing and accessory work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

NOTES:

a. Attention is directed to "flex" requirement at head of all partitions carried to structure above for both regular and "rated" walls.

b. Mold and humidity resistant boards shall be provided for all drywall partitions at all locations.

c. All internal reinforcing required to support light shelves, storage shelves, low partitions and the like shall be provided by this contractor.

d. All partition framing studs shall be a minimum of 4" in depth by minimum 20 gauge or as required by vertical spans under a deflection criteria of L/240.

1. Provide in map room 204, furring and "X" type gypsum wall board finish on all 4 walls as well as mechanical soffit enclosures as shown. Exterior wall to receive foil backed gypsum and rigid insulation.

2. Provide partition systems in design configuration shown and/or required to complete the work of the project. Coordinate with Section 04 20 00 for brick facing where openings are closed and brick is exposed and 09 24 00 for stucco finish on gypsum board over "plaster weld".

3. Provide partition systems for new women's toilet and shower room including furring; chase wall and conventional partitions.

4. Provide continuous 20 gauge steel grounds (steel attachment plates) minimum of 12 inches wide applied horizontally to steel studs to first stud beyond item being secured (both directions) prior to placement of gypsum. Provide grounds at all locations where casework, counters and/or cabinets, visual display boards, shelf standards, chair rails, hook strips, grab bars and the like are to be anchored to steel grounds with suitable screws and/or bolts. Further, where grab bars or carriers are installed, studs should be spaced at 8 or 12 inch centers (within 16 inch and 24 inch stud spaced partition construction respectively) and be blocked

with solid treated wood blocking from stud to stud; blocking shall be nominal 2 by 8.

COORDINATE WITH SECTION 06 00 00 AND OTHER SECTIONS FOR THE INSTALLATION OF CONTINUOUS WOOD/STEEL BLOCKING FOR ATTACHMENT OF RAILS, HANGERS, BATTENS AND THE LIKE.

5. Provide overhead bracing of all interior partition systems. Tie to structure above.
6. Tape and finish all gypsum work to Level 4 finish where exposed and Level 2 where shown to receive tile finish.
7. Provide all metal and/or PVC trim, casing beads, caulking, gaskets, control joints, fasteners, and all other appurtenances indicated on drawings, specified and/or required to provide a complete installation.
8. Caulk:
   a. all openings around pipes, fixtures and the like flush and neat prior to erection of tile finish.
   b. all door and window frames to surrounds;
   c. dissimilar materials, i.e. - gypsum to concrete, hollow metal to masonry and/or gypsum, concrete masonry and the like both vertical and horizontal
   d. All gypsum wallboard be installed with a fire sealant bead of 3/8 in. (9 mm) between the floor and the bottom edge of the gypsum;

   coordinate requirements with Section 07 90 00.
9. Install access panels where required using units furnished under terms and conditions set forth in Section 08 31 00. Tie access panels to supplementary framing provided herein.
10. Perform balance of gypsum construction as may be required to complete the work of the project.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. Furnishing of all door frames, access panels, etc. for installation in drywall construction.
B. 09 24 00 - Portland Cement Plaster
C. 09 30 00 - Tile Work

1.04 QUALITY ASSURANCE

A. All gypsum construction required under this phase of the work shall be performed in strict accordance with the following Reference Standards:
   1. Drywall Construction Guidelines promulgated by U.S. Gypsum within the 4th edition of the Gypsum Construction Handbook.
   2. ASTM C 754, Specifications for Installation of Steel Framing Members to Receive Screw Attached Gypsum Wallboard.
   3. ASTM C 840, Standard Specification for Application and Finishing of Gypsum Board.
   4. ASTM C 1178 - Standard Specification for Glass Mat Water Resistant Gypsum Backing Panel.
   5. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an

Environmental Chamber.

6. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
7. Applicable publications of the Gypsum Association; 810 First Street NE; Washington, DC 20002.
8. Balance of ASTM specifications governing gypsum construction, framing and fasteners as applicable to intended installation including - C 36, C79, C 442, C 645, C 931, C 1002, C 1047 and, as recognized by governing agencies/code facilitators ASTM C 1396.

B. Definitions: Gypsum Board Construction Technology: Refer to ASTM C 11 and GA-505 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

C. Fire rated Construction Ratings: Wherever fire resistance classifications (2 hour, 1 hour, and similar designations) are indicated on the Drawings, or required by local fire regulations and codes, for walls and partitions, provide materials, accessories, and use assemblies which have been listed by UL or tested in excess of requirements of ASTM E 119 for the type of construction shown and the governing building code and fire regulations, other requirements of these specifications notwithstanding.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Certification of Specification Compliance on all materials.
B. Product Data: Submit manufacturers' specifications for the following products: gypsum board, joint compound, acoustical sealant, insulation, metal studs and fasteners.
C. Samples:
   1. Gypsum Board: 12 inches square, each type specified.
   2. Fasteners: 10, each type.

3. Acoustical Sealant: 1 pint.
4. Insulation: 12 inches square, each type specified.
5. Studs, tracks, shoes, furring channels and accessories: 12 inch lengths, each type specified/required.
6. Trim systems, including reveal shapes.

D. Shop drawings and engineering calculations for any special areas of construction as determined by the Commissioner where same, in his opinion deviates from normal construction practice.

E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery and Handling
1. Deliver materials to the project site with manufacturer's labels intact and legible.
2. Handle materials with care to prevent damage.
3. Deliver fire rated materials bearing testing agency label and required fire classification numbers.

B. Storage
1. Store materials inside under cover, stack flat, off floor.
2. Stack wallboard so that long lengths are not over short lengths.
3. Do not overload floor system.
4. Store adhesives in dry area, provide protection against freezing at all times.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Temporary Climate control will be used to maintain dry bulb temperatures between 55 and 80 degrees F and relative humidity at less than 50% during installation, taping and curing of joint compound.

B. Ventilation
1. Provide ventilation during and following adhesives and joint treatment applications.
2. Use temporary air circulators in enclosed areas lacking natural ventilation.
3. Under slow drying conditions, allow additional drying time between coats of joint treatment.
4. Protect installed materials from drafts during hot, dry weather.

C. The moisture content of the taped and sanded gypsum board walls be measured and documented by the general contractor at two locations on each wall: the bottom edge and halfway between floor and ceiling. Specify that the interior finish may not be applied until the moisture content of the wallboard is below 0.4% on a gypsum moisture meter or below 12% on a wood meter.

D. Protection: Protect adjacent surfaces against damage and stains.

1.08 SPECIAL MATERIAL AND CONSTRUCTION REQUIREMENTS

A. All material used in areas scheduled and/or shown to receive ceramic tile shall be of fiberglass reinforced concrete panels (FRCP) or "special board" as noted in Part 2 herein. **GREEN board is precluded from use in this project.**

B. All material applied to interior of exterior wall either on furring channels or free standing framing shall be "foil backed" type.

C. **Board scheduled to receive veneer plaster finish shall be "regular" with application of "plaster weld". "Imperial" type plaster base material is not acceptable.**

D. Where gypsum finish is in contact with existing or new plaster, tape system shall be of the "fiberglass" type using compatible adhesive. Finish and application shall be as specified herein.

E. Maintain fire and acoustical ratings as required by carrying assembly to structure above and safing off.

F. Double all studs at openings, anchor from floor to structure above unless otherwise directed.

G. **Provide a deflection track system at top of all partitions carried to structure above. Where firestopping is required at rated partitions, employ combination deflection/fire stop track system or system known as FIRE BARRIER which has intumescent adhered to the track systems.**

H. Tolerances: Do not exceed 1/8 inch in 8 feet variation from plumb or level in any exposed line or surface, except at joints between planes or abutting edges or ends. Shim as required to comply with specified tolerances.

I. Provide control joints in all partitions at 30 foot maximum spacing; at all ceilings at 30 foot maximum centers without perimeter relief (900 square foot increments); at all ceilings at 50 maximum centers with perimeter relief (2500 square foot increments) and where ceilings form "L", "U" or "T" shaped configuration. Where joints are placed in rated partitions, conform to UL assembly data for particular installation; double framing at all joints.

J. Attention is directed to outside corners of construction within shower type areas scheduled to receive ceramic tile. Either an extruded "pvc" bead secured with copper staples or fiberglass tape set over a neoprene rod shall be used in/lieu/of standard corner beads which will maintain straight lines and preclude rusting or other deterioration of said construction.

1.09 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.

11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 MATERIALS - GENERAL

A. Basic gypsum wallboard materials for work in this section, unless otherwise specified, shall be as far as possible by one manufacturer.

Materials specified by trade name or model number are those of the United States Gypsum Company, similar and equal products of the following will be acceptable.

1. G-P Gypsum (Dens-Glass Products)
2. National Gypsum
3. CertainTeed

NOTE: ***Material shall be furnished with tapered edge for taping systems specified below and subject to criteria established in Part 1 above. It should be noted that no board will be permitted to be hung until a controlled environment is achieved for the work area(s) involved - i.e. fully weather protected and temperature/humidity controlled.***

2.02 WALLBOARD - SPECIFICS - Gypsum Wallboard shall conform to ASTM C 1396 for conventional material and C 1629 for abuse resistant material and shall be in 4 foot widths by largest practical length and as follows:

A. Humidity, mold and abuse resistant gypsum panels to have a non-combustible, moisture and mold resistant gypsum core encased in a mold and moisture-resistant, 100-percent recycled green, blue or purple face and brown back papers; 5/8 inch thickness, Type X.
   1. US Gypsum "SHEETROCK brand MOLD TOUGH AR" gypsum panels
   2. National Gypsum "Type XP/AR"
   3. G-P Gypsum "Dens-Armor Plus/AG"
   4. CertainTeed "ProRoc w/M2Tech"

   Or equal having a noncombustible, moisture and mold-resistant gypsum core that is encased in moisture and mold-resistant, 100 percent recycled face and back cladding; panels shall be classified Type X.

B. Ceramic tile backup at walls scheduled - Glass mat designed gypsum panels or Fiberglass reinforced cement panels (FRCP):
   1. "Dens-Shield Tile Backer" by G-P Gypsum
   2. "GlasRoc Tile Backer" by CertainTeed
   3. "Util-A-Crete" by FinPan Inc.
   4. "Wonderboard/Glas-Crete" by Custom Building Products, Inc.
   5. "Durock" by U.S. Gypsum Co.

2.03 STEEL STUD FRAMING - ASTM C 645

A. Stud and accessory systems shall be as manufactured by one of the following:
   1. ClarkDietrich Building Systems.
   2. MarinoWare; a Division of Ware Industries
   3. SCAFCO Corporation

4. The Steel Network

Or approved equal manufacturer.

B. Gauge - minimum 20 (0.0312) for all framing; NO LIGHTER MATERIAL SHALL BE USED. Acceptable alternatives are the "ProStud" assembly by ClarkDietrich or the "ViperStud" by MarinoWare each in 20 gauge equivalent as evidenced by the following.

1. ProStud20; 65 ksi. Minimum Thickness - 0.0220 inches; Minimum Design Thickness - 0.0232 inches.
2. Viper20; 57 ksi. 3-5/8 inches and down, minimum thickness - 0.0195 inches; minimum design thickness - 0.0206 inches. 4 inches and above, minimum thickness - 0.0209 inches; minimum design thickness - 0.0220 inches.

NOTE: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

Modify stud gauges at the following locations:

1. Steel studs behind toilet partitions - 16 gauge (0.055) minimum.
2. Steel studs adjacent to door bucks either:
   a. 16 gauge (0.055) minimum.
   b. "Boxed" studs, 20 gauge (0.0312) minimum.
   c. Patented system of jamb studs and header systems in gauges determined by span of opening and certified by engineering calculations equal to:
      1. "ProX Header System and Jamb Stud" by Brady Construction Innovations
      2. "Header Assembly and Jamb Stud" by Priceless Steel Products.
      3. "Red-Header Jamb and Header System" by ClarkDietrich Building Systems.
3. Track systems, gauge as for studs: Leg height, 1-1/4 inch throughout unless modified by details.

C. Deflection Track: "Slip Joint Design, SFT" as manufactured by Superior Metal Trim division of Delta Star, Inc. or approved equal furnished in gauge to match balance of partition framing.

D. Combination Deflection Track/Fire Stop System: Assembly shall be similar and equal to "Fire Trak Deflection and Firestop System" complete with stud clips to permit vertical movement and to restrict horizontal movement each as manufactured by the Fire Trak Corporation. Track shall be furnished in gauge to match balance of partition framing and in such design as to permit the execution of required firestopping with combination of gypsum wallboards and "cavity fill" of mineral fiber wool insulation all accomplished as part of the work of this Section.

NOTES: Options for both 2.03.C and D:

1. Clark/Dietrich Building Systems: Combination of TREF Deep Leg Track, (0.0312" Thick) and "Spazzer 9200 Bar" (0.0346" Thick).
2. "Snap-Trak" system as manufactured by Total Steel Solutions.

3. Preassembled track system known as "BLAZE FLAME" incorporating standard track systems.

E. All material shall be electro galvanized steel in locations and sizes as indicated or required by "limiting height" criteria.

2.04 FURRING CHANNELS: #25 gauge electro galvanized steel, U.S.G., Drywall Furring Channels, and/or RC1 as required installation.

2.05 ACCESSORIES

A. Corner Beads - General: #25 gauge, perforated, galvanized steel, U.S.G. Dur-A-Bead (#103), flange width as recommended by the manufacturer for each thickness of wallboard. Corner beads to be installed at all outside corners of gypsum.

B. Casing Beads: U.S.G. No. 400 Series or similar, as required where gypsum board abuts other materials unless noted otherwise.

C. Control Joints: U.S.G. No. 093 or similar.

D. Adhesive: recommended by the approved gypsum wallboard manufacturer for each particular installation.

E. Strapping - 20 gauge by 12 inch galvanized sheet steel or patented assembly known as "Danback® Flexible Wood Backing Plate" as distributed by Dietrich.

F. Provide preformed recessed wall niches, ready to receive tile finish specified in Section 09 30 00; two compartment rectangular units as manufactured by Noble Company "Pro Form - Model 304".

2.06 FASTENERS

A. Screws for fastening conventional gypsum board and "special" board systems: Corrosion resistant U.S.G. Drywall Screws, minimum 1-5/8 inch, Type S Flat Phillips, Hex or Pan Head, self drilling screws or as recommended by the accessory manufacturer for the specific condition and thickness of materials being joined.

B. Anchor Bolts and Studs: ASTM A 307, Grade A, carbon steel, with hex-head carbon steel nuts and flat steel washers. **Hot-dip zinc coated in accordance with ASTM A 153.** Provide bolt or stud type and size as required by structural design calculations required by 1.05 above.

C. Expansion Anchors: Federal Specification FF-S-325, Group II, Type 4, Class 1. Provide bolts listed or approved by one or more of the following and of diameter and length as required by structural design calculations required by 1.05 above.
1. Underwriters Laboratory.
2. Warnock Hersey (ITS).
3. International Conference of Building Officials.

D. Powder Actuated Fasteners: Federal Specification FF-P-395b. Manufacturer from AISI 1062 or 1065 steel, austempered to a minimum core hardness of 50 to 54 HRC and zinc plated in accordance with ASTM B 633. Provide fasteners listed or approved by one or more of the following and of type, diameter and length as appropriate for installation and construction type.:
1. Underwriters Laboratory.
2. Warnock Hersey (ITS).
3. International Conference of Building Officials.

2.07 GASKETS: Polyvinylchloride (PVC) closed cell foam, approximately 3/8 inch by 3/8 inch, buff or white, with pressure sensitive adhesive one side.

2.08 JOINT FINISHING SYSTEM:

A. Perforated reinforcing joint tape - Similar and equal to "Perf-A-Tape" by U.S. Gypsum.

B. Joint Compound - Regular Gypsum Installations: Similar and equal to U.S. Gypsum "Durabond" and/or "Ready-Mixed Joint Compound-All Purpose" ready mixed joint compound in formulation as determined by the manufacturer as suitable for intended use.

NOTE: See Part 1 herein for restrictive measures to be taken for preparation, application and curing of compound systems; further Toxicity/IEQ - Lime compound. All purpose joint and texturing compound containing inert fillers and natural binders. Pre-mixed compounds shall be free of antifreeze, vinyl adhesives, preservatives, biocides and other slow releasing compounds.

C. Joint Compound - "Special" Board Installations: "Durabond" setting type compound only.

D. Glass fiber pressure sensitive tape system for use with glass mat and/or fiber reinforced cement board at ceramic tile and other hard surfaced areas.

1. Fiber reinforced cement board at ceramic tile or other hard surfaced areas.

2.09 CAULKING/SEALING: Type V for general work, Type VII for fire caulking requirements, reference Section 07 90 00.

A. Acoustical Sealant: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

NOTE: Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Acoustical Sealant for Exposed and Concealed Joints:
   a. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.
   b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.
2. Acoustical Sealant for Concealed Joints:
   a. Ohio Sealants, Inc.; Pro-Series SC-170 Rubber Base Sound Sealant.
   b. Pecora Corp.; BA-98.
   c. Tremco, Inc.; Tremco Acoustical Sealant.

2.10 INSULATION

A. Sound attenuation batt type thickness and locations shown on drawings shall be of mineral fiber formulation and designed for friction fitting within stud cavity. Material shall be class "A" as per ASTM E 84 requirements.

B. Material binders shall be a rapidly renewable organic product and

overall product shall have a minimum 35 percent recycled content, classified as post-consumer and shall be free from urea-formaldehyde resins.

C. Fully seal and tape joints when accessible, fully butt all others to insure sound tight joint.

D. Material shall be one of the following:
1. Thermafiber, Inc.
2. Roxul

And shall conform to the following:
1. Density: 2.5 pcf (nominal).
2. Type: FS 15 Unfaced Insulation Blanket.
3. R-Value: 3.8 per inch.
4. Density - Greater than 1 inch: 3.0 pcf (nominal).

2.11 CEILING SUSPENSION SYSTEM

A. Hangers
1. 1/4 inch threaded rods supporting "tee" grid system.

B. Grid System Classification is "Heavy Duty" similar and equal to:
1. Chicago Metallic "System 640";
2. USG "Drywall Suspension System";
3. Armstrong "Drywall Grid, XL Design";

or approved equal.

NOTES:

- **GRID SHALL BE HOT-DIPPED GALVANIZED FOR ALL LOCATIONS.**
- **Grid shall be sway braced to comply with seismic requirements of the building codes.**

2.12 INSULATION SYSTEMS

A. "R-Max" or "Thermax" Sheathing polyisocyanurate insulation is a non-structural, rigid board insulation consisting of a glassfiber-reinforced polyisocyanurate foam core laminated between pinhole-free aluminum foil facers and shall exhibit the following performance characteristics.

B. Physical Properties of THERMAX Sheathing

Property and Test Method	**Value**
Nominal density, ASTM D 1622, pcf (kg/m3)	2
Water vapor permeance, ASTM E 96 (desiccant method), perms	< .03
Water absorption as percent increase by volume max., ASTM C 209(2 hr), % max.	0.3
Compressive strength, ASTM D 1621 (thickness direction), psi (kPa), min.	25
Tensile strength, ASTM D 1623, psi (kPa), min.	25
Shear strength, ASTM C 273 @ 74°F (parallel and perpendicular), psi (kPa), min.	24
Shear modulus, ASTM C 273 (parallel and perpendicular), psi (kPa), min.	250
Flexural strength, ASTM C 203, (modulus of rupture), psi (KPa)	1" = 88/59 (607/407)
	2" = 63/54 (434/372)
Dimensional stability, ASTM D 2126 (length	200°F (93°C): < 1.0

or width), % change	
	40°F (-40°C): < 1.0
	158°F (70°C) at 97% RH: < 1.0
Flash ignition temperature, ASTM D 1929, °F (°C)	900 (482)
Self ignition temperature, ASTM D 1929, °F (°C)	1025 (552)
Operation temperature range, °F (°C)	-100 to +250 (-73 to +121)

C. Size - 48 inch by 96 inch in thickness required to produce "R" factor specified in Part 1 above.

D. Adhesive - as recommended by the manufacturer for intended application.

2.13 Balance of materials required for the work shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION - PARTITION FRAMING

A. At all partition floor and ceiling tracks and wherever drywall partitions abut vertical masonry or concrete surfaces, provide gaskets and/or caulking/sealing.

B. When double layer, face caulk on base layer top, bottom and edges.

C. Provide drywall furring channels on walls and partitions where indicated. Secure channels to masonry or concrete at 16 inches o.c. with suitable fasteners at maximum of 24 inches o.c.

D. Framed partitions shall be constructed with steel studs and channels true to line and fastened to construction top and bottom at 24 inches o.c. Studs shall be twist locked into tracks at 16 inches o.c. Where shown, detailed, or required by applicable codes, partitions shall be carried to the base structure above and fastened.

NOTE: Attention is directed to Part 1 of this section for requirements for head deflection tracks and/or combination deflection track/fire stop systems at all locations where partitions are carried to base structure above in regular and/or rated configurations.

Double studs to structures at all openings.

Place steel studs approximately 2 inches from abutting partitions and 2 inches from each side of interior angle of all corners.

Secure steel studs to top tracks with galvanized steel adjustable stud shoes or within "flex track" or by use of double insert head track.

E. Stud Tracks - Standard 1-1/4 inch drywall floor and ceiling stud tracks securely fastened to beams, slabs or partitions with 1/2 inch stud bolts or other method approved by manufacturer spaced not more than 24 inches on centers. Gauge of steel, minimum 20 (0.0312) or as indicated on Drawings.

F. Horizontal Bracing - 3/4 inch steel furring channels fastened to inside of stud with webs in a horizontal position. Spacing of channels shall not exceed 6 feet.

G. All free standing furring and/or solid partition shall be aligned accurately according to the partition layout and constructed as for D. above.

3.03 BOARD APPLICATION - General application shall be as for gypsum board following requirements set forth in basic specification and as supplemented by ASTM C 840 specifications for Application and Finishing of Gypsum Wallboard.

A. Use board of maximum and practical length so an absolute minimum number of end joints occur.

B. Regular gypsum wallboard shall be brought into contact with each other but shall not be forced into place.

C. Locate wallboard joints at openings so that no end joints will align with edges of openings. Stagger end joints. Joints on opposite sides of partitions shall not occur on the same stud.

D. Center abutting ends or edges over the stud flanges. Where wallboard abutments are made between studs, free ends are to be back blocked. No two such joints should occur between the same two studs.

E. Locate all attaching screws 12 inches o.c. Attach all wallboard to studs with screws as specified.

3.04 CORNER AND TRIM TREATMENT

A. Internal Corners - Treat as specified for joints, except that the reinforcing tape shall be folded lengthwise through the middle and fitted neatly into the corner.

B. External Corners

1. Install a corner bead fitting neatly over the corner and secured with the same type fasteners used for applying the wallboard, spacing the fasteners approximately 6 inch on centers and driving through the wallboard into the framing and furring member.

2. After the corner piece has been secured into position, treat the corner with joint compound and reinforcing tape as specified for joints.

C. Where ceiling "reveal" trim details are used at intersection of gypsum board and companion ceiling systems, same shall be set **by means of a laser "Line of Light" system** only to insure a true and level plane.

D. The drawings do not purport to show all locations and all

requirements for metal trim in connection with the work of this Section. Carefully study the Drawings and the installation; provide in place all metal trim normally recommended by the manufacturer of the gypsum wallboard used in strict accordance with the manufacturer's recommended methods of installation.

3.05 GYPSUM WALLBOARD FINISHING

A. The following specification defines the level of finishing of gypsum board surfaces as defined in ASTM C 840, Article 22 and as amended by GA 214-90.

Level "2"- All joints and interior angles shall have tape embedded in joint compound and shall receive 1 separate coat of joint compound applied over all joints, angles, fastener heads and accessories; surface shall be free of excess joint compound; tool marks and ridges are acceptable.

Level "4" - All joints and interior angles shall have tape embedded in joint compound and shall receive separate coats of joint compound applied over all joints, angles, fastener heads and accessories; surface shall be free of excess joint compound; all surfaces shall be smooth and free of tool marks and ridges.

B. Allow each application of compound applied to joints and fasteners to dry, then sand if necessary. Caution shall be used to avoid roughing of wallboard paper.

3.06 DRYWALL CEILINGS AND SOFFITS

A. Framed drywall soffits shall have 20 gauge metal stud channels, 16 inches o.c., secured where possible directly to construction above, with suitable fasteners at a maximum of 24 inches o.c. Where greater spacing of fasteners is required, and where ceiling or soffit is to be suspended provide carrying channels suspended on 1/4 inch rod hangers. Lap channel ends 8 inches and wire tie together 1-1/2 inches from end of channel.

B. Provide all accessory items including edge trim angles, exposed for exterior applications and concealed for attachment and taping for all interior applications. See Paragraph 3.04 herein for **"Laser"** setting of joints between walls and ceilings if reveal system is required by details.

C. Secure single or double layer of gypsum wallboard to furring channels and tape and spackle with products as per Part 2 in accordance with Paragraph 3.02 above.

3.07 GYPSUM BOARD ON INSULATION

A. Where gypsum wallboard is indicated to be installed on insulation, it shall be installed as specified for finish layer of double layer drywall installation, except that it may be secured temporarily with 6d nails driven at a sharp angle until sufficient adhesive bond has developed.

B. Provide casing and corner beads and the like and tape and spackle joints and nail holes as specified for drywall partitions.

C. Insulation shall be provided as specified in Part 2 above.

3.08 FIELD QUALITY CONTROL: Prior to any board installations, Commissioner or designee will conduct an above-ceiling observation to ensure compliance with UL criteria for all full-height fire-rated partitions, and report deficiencies observed. Do not proceed with installation of gypsum board until deficiencies have been corrected.

3.09 PARTITION IDENTIFICATION

A. Place identification on all partitions indicated on Drawings as having a required fire or smoke rating, or lead lining.

B. Identification shall be as follows:

1. Type: Same as indicated on drawing legend.
2. Location: 10 feet on center, both sides of partitions, above ceiling lines.
3. Place above access panels in hard ceilings.
4. Style of Lettering: 2 inches high, helvetica style, painted with aid of stencils.
5. Color: Red.

3.10 PROTECTION AND CLEANING

A. Protect, by suitable means, all work of this section until responsibility for same shall have been relieved by next operation.

B. This Contractor shall sweep all his debris and remove same as work progresses.

3.11 WASTE MANAGEMENT

A. Separate clean waste gypsum products from contaminants for recycling in accordance with the Waste Management Plan. Do not include wood, plastic, metal, asphalt-impregnated gypsum board, or any gypsum board coated with glass fiber, vinyl, decorative paper, paint, or other finish. Place in designated area and protect from moisture and contamination.

B. Recycle clean waste gypsum products:

1. Return to gypsum board manufacturer.
2. Pulverize and apply on-site as soil amendment in accordance with landscape specifications. Do not use products containing glass fiber. Protect granular material from moisture.

C. Separate metal waste in accordance with the Waste Management Plan and place in designated areas for recycling or reuse.

End of Section

SECTION 09 30 00

TILE WORK

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of the tile and marble work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide ceramic tile floor in new toilet room 116 and new women's locker/toilet/shower room 210 along with renovation of existing toilet room 108.
2. Provide sanitary cove base in all rooms.
3. Provide "combination crack isolation and membrane" for all new floor systems.
4. Provide wainscoting in toilet rooms in locations shown and to heights as shown.
5. Provide saddles at all tile/dissimilar material floor changes.
6. Provide "prefabricated/preengineered" expansion/control joint systems; transition conditions and the like as shown on the drawings.

NOTES:

1. Installations of floors and base, including trim shall be in accordance with finish schedules, drawings, enlarged details and the like.
2. Provide applied surfacing to insure pitch to drains using material and approach approved by the Commissioner and compatible with specified setting methods.
3. Furring around vertical pipes, conduits and ducts, and columns in rooms or spaces having tile base or wall finish shall be faced with tile as scheduled or specified for room base and walls.
4. Coordinate with Section 09 29 00 for backup system for wall cladding, i.e. - FRCB or Dens-Shield at option of contractor.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above.

1.04 QUALITY ASSURANCE

A. All tile shall be standard grade and meet the requirements of ANSI A137.1, latest edition thereof, and further, All floor and ramp surfaces shall be certified to have minimum slip resistance characteristics of 0.6 for floors and 0.8 for ramps as promulgated by the 2010 ADA requirements.

B. Prepare floors, walls and base substrates for application of finish

and install same in accordance with Tile Council of North America recommendations and requirements governing said systems as listed in Part 3 of this Section.

C. Installer is to be a firm who has a minimum of three (3) years experience with the installation of specified materials.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Submit manufacturers' specifications and installation instructions for the following:
   1. Each type of tile and trim units specified.
   2. Waterproofing and setting materials specified.
   3. Grouting materials specified.
   4. Marble saddle type specified.
   5. Other items being incorporated in the work.

B. Shop Drawings - Submit Drawings indicating tile patterns and locations and width of control and expansion joints in tile surface when required by Commissioner.

C. Samples
   1. Initial Selection: Submit manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type of tile indicated. Include grout manufacturers standard range of colors for each grout type required.
   2. Verification Samples:
      a. Samples of each type and color specified, 12 inch by 12 inch sample with tile mounted on plywood or hardboard panels and grouted.
      b. 12 inch long sample of marble saddle, leveled and finished.
      c. Trim units: 2, each type and shape specified.

D. Master Grade Certificate
   1. Before setting any tiles, furnish to the Commissioner a

certificate of grade, etc., properly filled in on a Master Grade Certificate of the form recommended by the Department of Commerce.

2. Certificate shall be signed by the manufacturer of the tiles and by the subcontractor for the Work, stating the grade, kind and full quantities of tiles; and give identification marks for all packages of tiles furnished under this Contract.

3. Brand packages with corresponding shipping marks.

E. Certification of Specification Compliance.

F. Material Safety Data Sheet (MSDS) must be submitted for each product.

G. VOC data:

1. Adhesives:

a. Submit manufacturer's product data for adhesives. Indicate VOC limits of the product. Submit MSDS highlighting VOC limits.

b. Submit Green Seal Certification to GS-36 and description of the basis for certification.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery and Storage

1. All materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product manufacturer, color and/or other pertinent characteristics.

2. Store all materials under cover in a manner to prevent damage and contamination; store only the specified materials at the job site.

B. Protection - Use all means necessary to protect ceramic tile materials before, during, and after installation and to protect the installed Work and materials of all other trades.

C. Replacements - In the event of damage, immediately make all repairs and replacements necessary to the approval of the Commissioner and at no additional cost to the City of New York.

1.07 PROJECT CONDITIONS

A. Maintain environmental conditions and protect Work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Maintain temperatures at not less than 50 degrees F (10 degrees C) in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.

2. Water-soluble.

3. Can be cleaned up with water.

4. Non-flammable.

5. Biodegradable.

6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. All tile shall be as manufactured by:
1. Crossville
2. DalTile
3. American Olean
4. U.S. Ceramic
5. Florida Tile

or approved equal.

2.02 CERAMIC TILE

A. Floor Tile:
1. Porcelain type unglazed ceramic tile with smooth all purpose edge.
2. Thickness: not less than 1/4 inch thick.
3. Face Sizes: 2 inch by 2 inch.
4. Average absorption not to exceed 1/2 of 1%.

Colors as selected by Commissioner from clear and/or textured porcelain tile from a combination of "A" and "C" ranges with price group 1, 2 and 3, allowing a 25/50/25 percentage mix.

B. Wall Tile
1. Tile shall be glazed.
2. Cushion edged.
3. External corners to be bullnosed and Internal corners to be square.
4. Size - 3 inches by 6 inches field tiles.
5. price group 2-field and price group 3 for accents, allow 10%
6. All trim including cap, bullnose, cove, external and internal corners shall match field tile in size and color.

C. Bases - 6 inch by 4-1/4 inch glazed bullnose and/or square return units or as conditions dictate.

2.03 MARBLE SADDLES: Low absorption, Grade "A", flush style, full door jamb width by full width of opening, notched for door stops, corners rounded, all exposed surfaces honed finish.

2.04 MEMBRANE WATERPROOFING

A. Trowel applied membrane waterproofing shall be a single component elastomeric and seamless membrane system similar and equal to -
1. "Elastiment 344 Waterproof Membrane" as manufactured by Boiardi Products Corporation;

2. "Hydroment Ultra-Set" or "Gold" as manufactured by Bostik;
3. "Mapelastic HPG" by Mapei;
4. "Watertight" by Laticrete;

each as conforming to ASTM C 836 and ANSI A136.1.

B. Sheet membrane waterproofing (incorporating crack isolation properties) shall be similar and equal to "NobleSeal TS" by the Noble Company and shall be manufactured of non-plasticized Chlorinated Polyethylene (CPE), nominal thickness of 30 mils, flexible synthetic elastomer with fabric laminated on both surfaces. Material shall conform to Thin-Bed waterproof membrane standard ANSI A118.10. Equal products shall formulated to meet "Heavy Duty Service requirements per ASTM C 627".

2.05 SETTING MATERIALS

A. Floors -

1. Dryset Mortar, ANSI A118.1 for direct setting on concrete and on CIM for large format tile.
2. Combination membrane bond coat and latex modified thin set mortar over membrane material as above. Membrane bond coat to consist of -
   a. Portland Cement - ASTM C 150 Type 1
   b. Sand - ASTM C 144
   c. Acrylic latex admixture similar and equal to Bostik "Hydroment Multipurpose Acrylic Latex Additive #425" or Mapei "Keracrete".

   Bond Coat Proportions - 1:2-1/2:Acrylic Latex in quantity required to achieve a workable consistency. **NO WATER PERMITTED**. Thin set mortar - fast setting, latex modified, flexible system similar and equal to Bostik "Hydroment Single-Flex F.S. Mortar mixed with "#425 Latex" or Mapei "Keralastic".

B. Walls

1. Dry-Set (ANSI A118.1) or Latex Portland Cement (ANSI A118.4) Mortar - NO ADHESIVE SETTING PERMITTED.

C. Bases - As for wall systems.

D. Saddles - Dryset mortar, ANSI A118.1

2.06 GROUT

A. Epoxy for all floor tile surface areas, ANSI A108.6 and/or A118.3.

B. "Unsanded drywall grout systems" for walls, bases and soffits.

1. Bostik "Hydroment Dry Tile Grout, Unsanded".
2. American Olean "Dry Wall Unsanded Grout ".
3. Mapei "Keracolor U"

C. Corner to Corner Joints throughout, tile leading edge and base joints - "Silicone" rubber sealant in color to match grout system.

2.07 CRACK SUPPRESSION MEMBRANE - To be used at all control joints, shrinkage cracks in substrates and like conditions.

A. Materials shall be a composite sheet membrane manufactured from chlorinated polyethylene (CPE), laminated to non-woven fabric on both sides, nominal thickness 0.030 inches and shall be similar and equal to:

1. "NobelSeal CIS" crack isolation sheet as manufactured by the Nobel Company.
2. "ECB Anti-Fracture Crack Repression Membrane" as manufactured by National Applied Construction Products.

System shall be furnished with primers and adhesives as standard with the nominated manufacturers.

2.08 CUSTOM FABRICATED METAL EDGE STRIPS/CONTROL JOINTS/EXPANSION JOINTS, ETC.

A. Edge/divider strips shall be prefabricated from stainless steel to be used as conditions required for use where tile adjoins adjacent floor finishes be it carpet, resilient or concrete.

B. Size accessories as required and/or as shown on the drawings.

C. Material shall be as manufactured by Schluter Systems and shall consist of the following items and the intended locations.
   1. DILEX-EDP for all expansion/control joints in porcelain tile flooring.
   2. Adjustable Height: RENO-V.
   3. RENO-T where required to adjoin different types of floor coverings of the same height.
   4. QUADEC edging.

D. Coordinate type and location where used with the Commissioner.

2.09 Balance of materials required for the work shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

B. Verify that substrate will allow floor tile to slope to drains.

C. Before proceeding with any tile work, make sure that all waterproofing, sleeves and flashings for pipe have been installed and that piping systems have been run and tested.

D. Prepare and clean substrate in accordance with installation standards and manufacturer's instructions, and as follows:
   1. Remove protrusions, bumps and ridges by grinding or chipping.
   2. Repair, fill, and level cracks, holes, depressions and rough or chipped areas in substrate using patching material recommended by setting materials manufacturer.
   3. Concrete slab to have light broom finish when tile is installed by the thin-set method.
   4. Ensure that the substrate is within the following tolerances:
      a. Horizontal surfaces (floors) - Maximum variation in substrate shall not exceed 1/4 inch in 10 feet from required plane, depending on substrate.
      b. Vertical surfaces (walls) - Maximum variation in substrate shall not exceed 1/4 inch in 10 feet from the required plane, depending on substrate.

E. Jobsite Blending: Blend tiles before installing in accordance with reference standards to produce an even range and distribution of color and finish.

3.02 INSTALLATION - TILE WORK

A. All work shall be installed in accordance with the Recommendations of the Tile Council of North America (TCA) and the related American National Standards Institute (ANSI) Specification for the particular substrate involved be it concrete for floors or "Backerboard" or "CMU" for walls.

NOTE - Where tile systems are set over waterproof membrane, system shall consist of membrane, membrane bond coat and tile setting mortar of composition selected. Time sequence is deemed critical for proper curing and is established by the nominated manufacturer of the setting materials.

1. Floors: F115 for regular floors, F128 for membrane systems
2. Base and Walls: W244 or 245 dependent on backer system.
3. Grout - as for material specified in Part 2 of this Section.
4. Saddles - TH 611
5. Joints - EJ 171, sealant Type II and/or prefabricated system by Schluter in locations as scheduled.
   a. Large format tile, same as grout joint, but not less than 1/4 inch .
   b. Ceramic mosaic tile and glazed wall tile, never less than 1/8 inch, maximum 1/4 inch.
   c. Spacing, unless otherwise defined - 24 feet to 36 feet in each direction and where interior tilework exposed to moisture – 8 feet to 12 feet in each direction.
   d. Provide joints where tilework abuts restraining surfaces such as perimeter walls, dissimilar floors, curbs, columns, pipes, ceilings, and where changes occur in backing materials and at all expansion and control joints in building structure.

B. Tile shall be firmly bonded in place with finish surfaces in true planes. Joints shall be straight, true and uniform in width and solidly filled. The completed work shall be free from hollow sounding areas, loose, cracked or defective tile.

NOTE: Tiles larger than 8 inches square (200 mm) shall be pressed and twisted or mechanically vibrated into place so that mortar contact on backs exceeds 80 percent (interior, 95-100 percent exterior) and is sufficiently distributed to provide full support of tiles including edges and corners.

C. Tile work shall be laid out so that no tiles less than one-half full size shall occur.

D. Intersections and returns shall be accurately formed. Cutting and drilling of tile shall be neatly done without marring the surface. The cut edges of tile against trim, finish or built-in items shall be carefully ground and jointed. Tile shall fit closely around electrical outlets, piping, fixtures and fittings, so that plates,

collars or coverings shall overlap the tile. Recesses of proper size for built-in accessories shall be provided. Only sufficient clearance shall be allowed for leveling and plumbing to permit the metal trim to overlap the tile.

E. Joints
   1. Align all wall joints to give straight uniform grout lines, plumb and level.
   2. Align all floor joints to give straight uniform grout lines, parallel with walls.
   3. Make joints between tile sheets same width as joints within sheets so extent of each sheet is not apparent in finish work.
   4. Joints shall be grouted full and flush for square edge tile and to depth of cushion and concave for cushion edge tile.

F. Order of setting tile shall be first, base; second, walls; third, floors.

G. Provide all trimmers as necessary for a complete installation. Shapes shall be integral with wall tile (combinations) unless otherwise shown or noted. Tile plinths shall be provided where trim is shown for door openings in connection with tile base or wall finish. Wall finish shall extend into reveals of openings and shall be overlapped by trim, unless otherwise shown.

H. All tile shall have standard combinations at external and internal corners and at intersections with wall and floor finish.

3.03 GROUTING

A. Floors shall not be grouted before 72 hours after setting; walls before 24 hours. Before grouting, tile work shall be wet with clean water.

B. Follow grout manufacturer's recommendation as to grouting procedures and precautions.

C. Remove all grout haze, observing both tile and grout manufacturer's recommendations as to use of acid and chemical cleaners.

D. Rinse tile work thoroughly with clean water before and after chemical cleaners.

E. Polish surface of tilework with soft cloth.

F. Where colored joints are required, non-fading mineral oxides shall be mixed with white Portland cement to obtain desired color or an approved pre-mixed colored cement may be used.

3.04 PROTECTION AND CLEANING

A. Promptly remove all setting compound, grout and stains from face of all tile and adjoining surfaces.

B. All tiles which are cracked, broken, chipped or otherwise damaged, shall be promptly removed and replaced.

C. As soon as the tile work in each space has been grouted and cleaned, it shall be covered with either reinforced Kraft paper (Sisalkraft) or non-staining sawdust. Each of such spaces shall be closed to all traffic or work by approved barriers which shall be maintained until tiles are firmly set. Floor covering shall be kept and maintained until completion of the work of all trades or as otherwise directed by the Commissioner, when it shall be removed

without damage to tile or adjoining work.

D. For final acceptance of the project, leave all tile work clean, whole and in perfect condition.

3.05 WASTE MANAGEMENT

A. Separate waste in accordance with the Waste Management Plan and place in designated areas in the following categories for recycling:

1. Half tiles and larger: Set aside for reuse by City of New York or nonprofit organizations such as Habitat for Humanity
2. Broken tile, cutoffs smaller than 1/2 tile, and excess mortar and grout: Crush for use as mosaic, sub-base, or fill
3. Separate metal waste and place in designated areas for recycling or reuse.
4. Separate cardboard waste and place in designated areas for recycling.

End of Section

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SECTION 09 51 00

ACOUSTICAL TREATMENT

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of acoustical ceiling treatment for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide conventional 2 by 2 square edge lay-in acoustical ceilings in Map Room 204 and Office 110 (ACT-1).
2. Provide "Ceramagard" type 2 by 4 ceiling system in new Women's space 210 (ACT-2).
3. All basic ceiling hanger systems shall comply with the requirements of the local governing codes; grid systems shall be "seismic" resistant to applicable zone rating as set forth in the 2008 New York City Building Code.
4. Ceilings shall be complete with all stops, reveal edges, trim systems and the like necessary and/or required to make the work complete. Provide custom "edge moldings" and trim systems at junctures of acoustical treatment and gypsum board fascias; coordinate with Section 09 29 00.
5. Provide acoustical sealant at edge moldings at acoustical ceilings.
6. Perform balance of acoustical treatments as required to complete the work of this project.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. Sound attenuation in partition construction
B. Division 23 - Mechanical equipment sound isolation

1.04 QUALITY ASSURANCE

A. Before starting any work under this Section, all surfaces and attachments to receive acoustical treatment and related suspension systems shall be inspected as per Part 3, Paragraph 3.01.
B. Prior to installation ascertain that the building is sufficiently weathertight to prevent damage to the work. Roofing and roof flashings shall have been completed and roof found to be watertight. All exterior openings shall have been glazed or otherwise weather protected.
C. All work of a nature conducive to high humidity conditions shall have been completed and be thoroughly dry. This contractor shall be held responsible for the cost of replacing all work of this Section damaged due to his failure to take the above precautions.

D. Maintain uniform temperature of not less than 55 degrees F (13 degrees C) in rooms and spaces scheduled and/or required to receive acoustical treatment, before, during and after installation.

E. Fit all units neatly around electrical fixtures, outlets, ducts, pipes and other work penetrating ceilings and/or soffits, and neatly scribe to abutting surfaces.

F. Reference Standards

1. Underwriters Laboratories, Inc. - Fire Resistive Directory as applicable for intended use.
2. Acoustical and Insulating Materials Association - "Job Conditions" manual.
3. ASTM A 366 "Standard Specification for Steel, Carbon Cold-Rolled Sheet, Commercial Quality"
4. ASTM A 641 "Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire"
5. ASTM A 653 "Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process"
6. ASTM C 635 "Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings"
7. ASTM C 636 "Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical and Lay-in Panels"
8. ASTM C 423 "Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method"
9. ASTM E 1111 "Standard Test Method for Measuring the Interzone Attenuation of Ceiling Systems" (for open plan products)
10. CISCA Ceiling Systems Installation Handbook.

G. Fire Hazard Classification: ASTM testing for tile acoustical conformance, suspension systems, metal ceilings, fire and smoke characteristics and the like as governed by C 423, C 635, C 636, E 84 and E 119 respectively and shall be rated as Class A in all respects and shall have a **smoke developed rating of less than 450 in accordance with the New York City Building Code with specific reference to Section 803, 803.1 and 803.1.1.**

H. Pre-installation Conference: Conduct a conference, prior to start of installation, to review system requirements, shop drawings, and all coordination needs.

I. Agency Standards

1. New York City Board of Standards and Appeals (BSA)
2. New York City Materials evaluation approvals (MEA)
3. New York City Building Code

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Samples of all acoustic materials.
   1. Color samples: Manufacturers standard colors (finishes) for Commissioner's selection.
   2. Suspension system components and moldings/trim.
   3. Acoustical material sample.

B. Shop drawings for all work under this section to show layout of acoustical ceilings and details; coordinating and showing fixtures, diffusers and locations of other items occurring in ceilings, ceiling pattern, closures at walls, columns and other intersection points.

C. Certification of Specification Compliance.

D. Material Safety Data Sheet (MSDS) must be submitted for each product.

E. Coordination Drawings: Reflected ceiling plans drawn to scale and coordinating penetrations and ceiling-mounted items. Show the following:
   1. Ceiling suspension members.
   2. Method of attaching hangers to building structure. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
   3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
   4. Minimum Drawing Scale: 1/4 inch = 1 foot.

F. Maintenance Data: For finishes to include in maintenance manuals.

G. Pre-installation Conference: Conduct a conference, prior to start of installation, to review system requirements, shop drawings, and all coordination needs.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver all materials in manufacturer's original unopened packaging fully identified with type, finish, performance data and compliance labeling.

B. Store materials in environmentally approved conditions.

C. Acclimate all acoustical materials a minimum of 24 hours prior to installation to stabilize moisture content and temperature.

D. Handle acoustical materials carefully to avoid chipping edges or

damaging units in any way.

1.07 ATTIC STOCK

A. Prior to final acceptance of project, furnish to the Commissioner additional acoustical tile in each type and pattern installed.

B. All materials must be new, clean, undamaged and in original containers. Furnish not less than 3 full boxes of each type and pattern installed from same run of materials installed. Additional material shall not be used for punch list corrective work.

1.08 SPECIAL GUARANTEE/WARRANTY TERMS

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:

1. Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.
2. Grid System: Rusting and manufacturer's defects
3. Acoustical Panels with BioBlock Plus or designated as inherently resistive to the growth of micro-organisms installed with Armstrong suspension systems: Visible sag and will resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.

B. Warranty Period Humiguard:

1. Acoustical panels: Ten (10) years from date of substantial completion.
2. Grid: Ten (10) years from date of substantial completion.
3. Acoustical panels and grid systems with HumiGuard Plus or HumiGuard Max performance supplied by one source manufacturer is thirty (30) years from date of substantial completion.

1.09 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 CEILING SYSTEM

A. Acoustical material shall be manufactured to meet Federal Specification Number SS-S-118a, Class 25, noncombustible for the type, pattern, class, grade and light reflectance coefficients specified herein and further, for the purposes of establishing a standard of quality and not for the purposes of limiting competition, the basis of these specifications are upon nominated materials and manufacturers listed; equal products by U.S. Gypsum and Celotex will be considered equal.

ACT #	Armstrong
ACT-1	1850
ACT-2	608

All ceiling tiles shall be "humidity resistant" and shall have a minimum of 50% recycled content.

2.02 SUSPENSION SYSTEMS

A. Suspension systems provided for the execution of the work of this project shall be sufficiently rigid to support ceiling mounted lighting fixtures; provide for necessary cutouts or supports for mechanical work and the like. System shall be classified "heavy duty", complying with ASTM C 635 "Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings".

B. Components:

1. All main beams and cross tees shall be commercial quality hot dipped galvanized steel coating as per ASTM A 635 and finished as below.

   All steel roll-formed parts shall be chemically cleansed **hot dipped galvanized steel**; cold galvanizing or painted grids are not acceptable. Capping shall be prefinished galvanized steel in a baked polyester paint finish.

   Color shall match the actual color of the selected ceiling tile, unless otherwise specified. Off-white is not acceptable.

2. Main Beams and Cross Tees shall be double-web steel construction with 15/16 inch type exposed flange design. Cross Tees shall have staked-on end detail allowing easy cross tee removal and remounting as well as flush fitting.

3. Exposed bottom flange shall be continuous with unbroken roll-formed cap, made from steel, running the length of the member.

   a. Main Beams and Cross Tee web heights shall be minimum 1-1/2 inches in all cases.

   b. End condition of Cross Runners: Override; quick release design.

4. Wall moldings shall be stepped molding with exposed flange of the same width as exposed runner.

C. Manufacturers:

	Armstrong	US Gypsum	Chicago
15/16 Std:	Prelude XL	Donn DXZ	1200
15/16 Rated:	Prelude FG	Donn DXLZ	1250

NOTE: Support main runners directly from hangers; do not bear and grid member on partitions or walls; do not permit any main runner to free span more than 6 inches.

2.03 HANGER SYSTEMS

A. Hanger system for suspension shall consist of 1-1/2 inch black iron channels suspended from structure with 1/4 inch diameter rods with clips, anchors and clamps similar and equal to those manufactured by Erico Products, Inc., "Caddy" Fastener Division, at 4 foot spacing.

B. Suspension tees shall be clipped or tied as required.

C. Arrangements shall be in accordance with 2008 New York City Building Code RS 5-16 as most recently amended.

D. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.

1. Anchors in Concrete: Anchors with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency; zinc-plated for Class SC1 service.

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.

E. Provide any special arrangements of suspension systems to accommodate partitions, bridging for light fixtures, registers and diffusers, and the like, all as required by the installation.

NOTE: Fixture clips shall be installed in each corner of the light fixtures as required by installation; coordinate with reflected ceiling drawings and/or coordination drawings as per the DDC General Conditions.

F. All ferrous metal components concealed in the work shall either be hot-dipped galvanized or precoated with rust-inhibiting paint.

2.04 Balance of materials required for the work shall be as specified elsewhere in this Section.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION - GENERAL

A. Install work in strict accordance with manufacturers' recommendations, ASTM C 636 and/or requirements of the Specifications for Acoustical Tile and Lay-In Panel Ceiling Suspension Systems cosponsored by Acoustical Materials Association, Acoustical Contractors Association and Suspended Ceiling Manufacturers' Association and the requirements herein whichsoever is most restrictive.

B. Joints shall be hairline, uniform and surfaces of treatment precisely aligned. Perimeter moulds shall be true to line and precise at joints. Upon completion, all acoustical ceiling installation shall present a uniform plane surface, free from blemishes and imperfections.

C. Carefully fit units in place and lay out so as to uniformly fit the ceilings making a neat design and pattern conforming to the approved shop drawings. Any variation of unit sizes shall occur only at the borders and abutting items.

D. Unless otherwise indicated on the approved shop drawings, **contract drawings or directed by Commissioner,** layout system starting at center line of area so that not less than half a unit occurs at borders. Arrange directionally patterned units in manner approved by the Commissioner.

E. Where ceiling drops occur in acoustical ceilings, construct fascias as shown and/or required.

F. Any acoustical work damaged, scarred, chipped, gouged, bent, out of alignment and the like, regardless of how or by whom or when, shall be replaced with new to the satisfaction of the Commissioner, at no increase in the Contract Price.

3.03 FIELD QUALITY CONTROL

A. Deflection of any grid component shall not exceed 1/360 of the span.

3.04 CLEANING

A. Following installation, all soiled, abraded or discolored surfaces of work installed herein shall be cleaned and left free from blemishes or defects.

B. All work that is damaged or improperly installed shall be removed and replaced and the entire installation left in complete and satisfactory condition.

3.05 WASTE MANAGEMENT

A. Separate clean waste gypsum and cellulose products from contaminants for recycling in accordance with the Waste Management Plan. Do not include any gypsum or cellulose product coated with glass fiber, vinyl, decorative paper, paint, or other finish. Place in designated area and protect from moisture and contamination.

B. Store panels 2 sq. ft. or larger for use in patching and small infill areas.

C. Existing panels removed from Project:

1. Return to manufacturer for renewal/refinishing program
2. Pulverize clean, unpainted gypsum products and apply on-site as soil amendment in accordance with landscape specifications. Do not use products containing glass fiber. Protect granular material from moisture.
3. Return pure perlite products to manufacturer for recycling.

D. Check with manufacturer for recycling options. Some manufacturers take back ceiling tile for manufacturing into new tiles.

E. Separate metal waste, packaging, and all other materials in accordance with the Waste Management Plan and place in designated areas for recycling or reuse.

End of Section

SECTION 09 65 00

RESILIENT FLOORING

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all resilient flooring work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide new VCT flooring and companion vinyl base in Office 110.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 03 30 00 - Plain and Reinforced Concrete

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 fire test performance requirements.
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 which complies with the following performance criteria as determined by an independent testing laboratory acceptable to authorities having jurisdiction.

1. ASTM E 648 (Critical Radiant Flux) of 0.45 watts per sq. cm. or greater, Class I.
2. ASTM E 662 (Smoke Generation) Maximum Specific Optical Density of 450 or less.
3. ASTM E 84 - Flame Spread: Not more than 25; rated as Class 1.

C. General Performance Requirements

1. ASTM F 710 Standard for Concrete or other monolithic floors.
2. Resilient Floor Covering Institute (RFCI): Standard Slab Moisture Test Method (Calcium Chloride Method) and/or The relative humidity probe method, also known as the RH test or the "in situ" test as per ASTM F2170-02, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are

complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Product Data - Provide manufacturers' specifications, installation instructions and surface preparation requirements 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.
      b. Base: 12 inch long sections, each type and color specified.
      c. Adhesives: One pint, each type, labeled to indicate location of use and type of surface to receive product.
      d. Floor Finish: One pint.

C. Submit a copy of the manufacturer's recommended maintenance procedures for resilient flooring and accessories provided under this Section.

D. Certification of Specification Compliance.

E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Store materials (resilient flooring, base and adhesives) in location having a minimum temperature of 65 degrees F for at least 24 hours prior to start of laying of flooring.

1.07 PROJECT CONDITIONS/REQUIREMENTS AND RESTRICTIONS

A. Environmental Requirements: Maintain a minimum temperature in the spaces to receive the flooring and accessories of 65 degrees F (18 degrees C) for at least 48 hours before, during, and for not less than 48 hours after installation. Thereafter, maintain a minimum temperature of 55 degrees F (13 degrees C) in areas where work is

completed.

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 same are cured and sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test which will determine if their moisture content and alkalinity are within acceptable limits for installation of resilient flooring as specified in Part 3.

C. All work of a nature conducive to high humidity conditions shall have been completed and be thoroughly dry. This contractor shall be held responsible for the cost of replacing all work of this Section damaged due to his failure to take the above precautions.

1.08 ADDITIONAL MATERIALS

A. Prior to final acceptance of the project, furnish to the Commissioner additional resilient flooring, and base in each color, type and pattern installed. All materials must be new, clean, undamaged and in original containers.

B. Furnish materials at the rate of 1 carton for each 1000-1500 sq. ft. Furnish 1 roll of base for future replacement. Additional material shall not be used for punch listing.

1.09 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:

1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 VINYL COMPOSITION TILE: 12 inches by 12 inches by 1/8 inch; colors and design as selected; F.S. #SS-T-312B (1), Type IV, Composition 1, asbestos free.

A. Manufacturers:

1. Tarkett (Expressions)
2. Mannington (Essentials/Impressions)
3. Armstrong (Excelon/Standard Excelon)

Or approved equal.

2.02 ACCESSORIES

A. Vinyl Base shall be a thermoplastic formulated from a homogeneous polyvinyl chloride (PVC) composition combined with high quality additives and colorants designed specifically to meet the performance and dimensional requirements of ASTM F 1861, Type TV, Group 1 (solid) Standard Specification for Resilient Wall Base and shall conform to the following physical characteristics.
   1. Compression type.
   2. 4 inch high, .080 inch thick (tolerance $\pm$ .005 inch).
   3. Top corner rounded, bottom coved, arranged for above floor application for tile areas; toeless for carpet applications.
   4. 120' (36.58 m) coiled lengths.
   5. Furnish inside and outside corners with 4 inch (10.16 cm) returns.

B. Base shall comply with the following performance characteristics.
   1. Hardness - ASTM D 2240: Vinyl - 90 Shore A.
   2. Flexibility - Will not crack, break, or show any signs of fatigue when bent around a 1/4 inch (6.4 mm) diameter cylinder.
   3. Meets or exceeds the performance requirements for resistance to heat/light aging, chemicals, and dimensional stability when tested to the methods, as described, in ASTM F 1861.
   4. Fire Resistance: ASTM E 84/NFPA 255 (Steiner Tunnel Test) - Class C; ASTM E 648/NFPA 253 (Critical Radiant Flux) - Class 1; ASTM E 662/NFPA 258 (Smoke Density) - 450 or less.

   Manufacturers - Flexco "Vinyl Molded Wall Base TV"; Mercer; Musson; Johnson or approved equal.

C. Vinyl Saddles, Reducing Strips and Termination Accessories.
   1. Flush or tapered as indicated.
   2. Thickness to match adjacent material.
   3. Colors as selected.

   Manufacturers - Tarkett, Nafco, Mercer, or approved equal.

2.03 UNDERLAYMENT

A. Material for use shall be as recommended by flooring material manufacturer; use where necessary to level floors, fill depressions, etc. to insure conformance as noted in Paragraph 3.02 herein.

B. Products shall be similar and equal to Henry #445 or #547 as suitable for the proposed installation.

2.04 ADHESIVES AND PRIMERS

A. Materials shall be "v.o.c." compliant (green) and suitable for intended purpose be it tile, treads or other such resilient flooring material; location and structural conditions required and/or intended; use without adulteration or reducing and in accordance with manufacturer's printed instructions; types for each use shall be approved by the manufacturer of the respective materials and certifications of same in writing, shall be delivered to the Commissioner.

B. Conventional resilient floor tile adhesives shall be as manufactured by:
   1. W.W. Henry (#GL33)

2. Armstrong (#S515/570 as suitable for intended substrate)
3. Domco/Tarkett
4. XL Flooring (#LS1100/4000 as suitable for intended substrate)

or other prime tile manufacturer nominated for the work of this Section.

C. Wall Base adhesive: Similar and equal to Henry "595 Cove Base Adhesive".

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 PREPARATION, GENERAL

A. Surfaces receiving resilient flooring shall not vary more than 1/8 inch in 10 foot distance, more than 1/16 inch within any 1 foot distance. Any deviation from this tolerance shall be filled by the Contractor with underlayment material approved by the flooring manufacturer for use under adhesive and resilient flooring specified herein; FURTHER, This Contractor shall patch and level all minor surface imperfections such as cracks, rough areas and depressions in all concrete floor slabs to receive resilient flooring in accordance with above tolerance statement.

B. Perform a bond and moisture test as recommended by the resilient flooring manufacturer on concrete subfloors to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and any other coatings; and ready to receive resilient flooring.

C. Remove from the subsurface all dirt, grease, oil, dust and other materials which might impair adherence of resilient flooring and base. Vacuum or broom-clean surfaces to be covered immediately before the application of flooring and/or base.

3.03 INSTALLATION - GENERAL

A. All floor coverings shall be installed in full accordance with the manufacturer's written instructions, using recommended adhesives, tools, and procedures. Observe the recommended adhesive trowel notching, open times, and working times.

B. No resilient flooring shall be set where it is required to be flush with other finishes until such other finishes have been installed and approved.

C. Lay resilient flooring only while adhesive has proper tack, starting at center and working toward walls. Borders of field shall be equalized and no marginal tile shall be less than 4 inches wide, except where tile abuts askew vertical wall surfaces.

D. Marginal tile shall extend full width thru door openings to adjoining areas having like floor covering and have as few cross joints as possible, none of which shall occur in the center of the opening.

E. At door openings between spaces having two different types or colors of floor materials of the same thickness and at which no saddle or metal edge strip is indicated on the drawings, make the change of finish material under the door in a closed position. Except where otherwise noted in Finish Schedules, extend like flooring materials into all closets and the like opening into rooms and other spaces having resilient flooring.

F. Joints shall be tight, straight and inconspicuous; parallel to and at right angles with the enclosing walls and symmetrical with centerlines of rooms unless otherwise noted.

G. Flooring shall not be cut except at walls and other abutting surfaces and materials. Holes required for pipes or other penetrations shall be neatly cut and flooring closely fit so as to leave no space for dirt to collect. Seal joints inconspicuously with waterproof floor mastic around pipes and at other vertical surfaces.

H. All finish floor surface shall be smooth and free from buckles, waves, projecting edges, cracks and breaks.

I. Provide tapered edge strips where edge of tile is exposed, and elsewhere as may be indicated on the drawings.

J. Provide tapered or flush vinyl saddles as indicated on the project drawings at door and other openings between floor materials of different patterns or colors; one piece, color as selected.

K. All work shall be neatly fitted around work penetrating floors and neatly scribed to abutting surfaces.

3.04 VINYL BASE INSTALLATION

A. Installation shall not begin until flooring is completed and approved.

B. Install on walls, partitions, columns, piers, cabinets, etc., to form continuous base at junction of vertical surfaces and finished floors.

C. Keep vertical joints to a minimum by setting long strips.

D. Base shall be continuous around external corners and lap a minimum of 6 inches.

E. Base shall be continuous around internal corners and lap a minimum of 2 inches.

F. When base terminates at external corner, provide integral molded corner.

3.05 CLEANING

A. Promptly remove all excess adhesives and other surface soiling or stains from face of all flooring, bases and adjoining surfaces using cleaning agents recommended by the manufacturer of the material being cleaned.

B. Perform initial maintenance according to the flooring manufacturer's instructions.

3.06 PROTECTION

A. Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades, or the placement of fixtures and furnishings.

B. All rooms or spaces in which resilient floors are being laid shall

be closed to traffic or other work and kept closed until floors are completed and firmly set.

C. Just prior to final acceptance of the project, leave all resilient floors polished, buffed, clean, whole and in perfect condition.

3.07 SITE ENVIRONMENTAL PROCEDURES

A. Indoor Air Quality: Ventilate products prior to installation. Remove from packaging and ventilate in a secure, dry, well-ventilated space free from strong contaminant sources and residues. Provide a temperature range of 60 degrees F minimum to 90 degree F maximum continuously for minimum 72 hours. Do not ventilate within limits of Work unless otherwise approved by Commissioner.

3.08 WASTE MANAGEMENT

A. Separate waste in accordance with the Waste Management Plan and place in designated areas in the following categories for reuse:
   1. Sheet materials larger than 2 sq. ft.
   2. Tiles larger than 1/2 tiles

B. Linoleum waste may be shredded and composted.

C. Close and seal tightly all partly used adhesive containers and store protected in well-ventilated, fire-safe area at moderate temperature.

End of Section

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SECTION 09 67 00

SPECIAL FLOORING
Fluid Applied Coating For Traffic Areas
(Coordinate with Section 03 30 00)

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of special flooring treatment of traffic areas for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Prepare both new and existing concrete floors by abrasive blasting as specified herein.
2. Provide a penetrating sealer, 2 coats, to all prepared surfaces.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 03 30 00 - Cast In Place Concrete

1.04 QUALITY ASSURANCE - See Concrete Section for information.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Product and application data.
B. Certification of Specification Compliance
C. Maintenance instructions.

D. Special handling instructions or precautions to be taken during installation.
E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING
A. All materials shall be delivered at the project site in manufacturer's original containers.

1.07 JOB CONDITIONS
A. Maintain substrate and application air temperatures between 60 degrees and 90 degrees F.
B. Job area to be free of other trades during, and for a period of 24 hours, after floor installation.
C. Before beginning any work, and upon completion of subsurfaces, test the subsurfaces to determine if their moisture content is within acceptable limits for installation of special flooring. Inform the Commissioner of adverse conditions as per Paragraph 3.01 herein.
D. Remove from the subsurface all dirt, grease, oil, dust and other materials which might impair adherence of special flooring and base.

1.08 SPECIAL GUARANTEE/WARRANTY TERMS
A. Contractor shall furnish a single, written warranty covering both material and workmanship for a period of 1 full year from date of installation.

1.09 SUSTAINABILITY
A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 MANUFACTURER: PROSOCO, Inc.; Detrich; BASF or approved equal.

2.02 PRODUCT DESCRIPTION - Consolideck® Saltguard® WB is a ready-to-use water-based, VOC compliant silane/siloxane water repellent and "chloride screen" for the protection of concrete and masonry surfaces. Saltguard®

WB penetrates more deeply than conventional water- or solvent-based water repellents. Low odor and alkaline stable, Saltguard® WB is ideal for field or in-plant application to concrete and most masonry surfaces. Saltguard® WB protects surfaces from moisture intrusion and chemical attack of chloride salts. Saltguard® WB screens chlorides from penetrating through concrete to reinforcing steel and reduces rebar corrosion and surface spalling caused by water-carried salts. Saltguard® WB is appropriate for use on horizontal surfaces such as driveways, sidewalks, and tile, brick and sandstone pavers, as well as providing excellent protection for retaining walls, bridge pilings and other vertical surfaces exposed to de-icing salts.

2.03 TECHNICAL DATA

A. FORM: White liquid
B. SPECIFIC GRAVITY: 0.997
C. pH: 7 to 8
D. WT./GAL.: 8.24 pounds
E. ACTIVE CONTENT: 10 percent
F. TOTAL SOLIDS: 9 percent
G. FLASH POINT: greater than 212 degrees F (greater than 100 degrees C)
H. FREEZE POINT: 32 degrees F (0 degrees C)
I. VOC CONTENT: Complies with all known national, state and district AIM VOC regulations.

2.04 PERFORMANCE TESTS

A. NCHRP 244 Series II Reduction of Water Absorption (compared to untreated control) 88%
B. ASTM E 514 Wind-Driven Rain Penetration (percent reduction of control) 91%
C. ASTM C 672 Scaling Resistance Exposure to De-Icing Chemicals and Freeze/Thaw Cycles - no mass loss; no scaling.
D. Resistance to: Sunlight -- Excellent; Alkalinity -- Excellent
E. Surface Appearance (after application) No change

2.05 Balance of materials required for the completion of the work herein shall be provided as determined by the manufacturer of the selected product.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.
B. Concrete preparation shall be by mechanical means and include use of scabbler, scarifier, or shot blast machine for surface removal where required to satisfy manufacturers criteria.
C. Blast tracking media shall be one of the following as suitable for encountered substrate.

Type	Diamete	Profile	Application

	r		
BT#1	.017"	Very Fine	New Concrete
BT#2	.023"	Fine-Medium	Concrete Sealer; Thin Paint Coats
BT#3	.0.28"	Fine-Medium	Thin Urethane Coats
BT#4	.033"	Medium	Thick Buildup; Thick Urethane Removal
BT#5	.039"	Coarse	Heavy Buildup; Epoxy Profile
BT#6	.046"	Extremely Coarse	Removing 1/8"- 1/4" Surface for Epoxies

D. Substrate shall not vary more than 1/8 inch from true plane in 10 feet.

E. Clean and fill joints and cracks wider than 1/16 inch with flexible epoxy.

3.02 INSTALLATION - GENERAL

A. Apply Saltguard® WB in a single saturating application. Use enough to keep the surface wet for 2 to 3 minutes before penetrating. Do not over apply.

B. Broom out all puddles thoroughly until they penetrate the surface. Wipe up all excess material.

3.03 CLEANING - clean tools, equipment and surfaces affected by over spray with soap and warm water.

3.04 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 09 90 00

PAINTING

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of the preparation, painting and finishing work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Prepare and coat all new masonry walls - block filler + 2 coats.
2. Prepare and coat all toilet and shower room walls using a high performance coating system including block filler and 2 coats of epoxy or urethane coating.
3. Provide "vapor barrier" coating on inside of exterior wall at Map Room 204.
4. Prepare and coat all new gypsum wall with primer and 2 finish coats of latex/acrylic paint.
5. Refinish existing areas modified and/or disturbed by this construction program and prior "probe" work.
6. Field finish all new and rebuilt steel stairs, rails, platforms and the like.
7. Field finish all new doors and frames.
8. Patch, match and extend existing plaster surfaces where damaged as a result of the alteration work and "probes".
9. Clean, rustproof and paint all lintels throughout the building that are shown to remain.
10. Prepare and coat all existing skylight curbs and framing including skylight guards.
11. Prepare and coat all exposed exterior and interior metal work shown and/or required to receive protective coatings from weather exposure and or exposed to view in the finished work.
12. Coordinate mechanical and electrical painting requirements with Divisions 21 through 28 for description and intent of work. Paint exposed sprinkler system, mechanical and electrical piping, conduit, pipe insulation, junction boxes, electric panel covers etc. except in rooms labeled Utility Room, Boiler Room, Equipment Room and Mechanical Equipment Room.
13. Prepare and coat both existing and new plaster surfaces affected by the scope of this alteration.
14. Prepare all interior wood surfaces, both scheduled to remain and new work as scheduled to receive new coatings and coat same either natural or opaque as scheduled.

15. Mark all lines and stripes on the flooring with Industrial Safety marking tape, width and layout as shown on drawings. Provide 2 colors as selected by the Commissioner.
16. Touch up all other work affected or damaged by the work of this Contract.
17. Perform balance of painting and finishing operations as may be necessary and/or required to "cover" all surfaces exposed to view in the finished construction.

NOTE: The bidders shall base their bid on the use of 4 base colors plus 2 accent colors plus "OSHA" type marking systems. Drawdown's to be 48 inches by 48 inches. Provide 2 full walls of selected colors with lighting as proposed for the spaces for Commissioners' review and approval. All coatings for wood shall be Semi-Gloss; all wall surfaces shall be "Egg Shell"; all ceilings shall be "Flat". Accent walls will be selected by the Commissioner based upon orientation, use and the like.

Gloss Ratings:

Gloss Designation	Units at 60 Degrees	Units at 85 Degrees
Flat	0 to 5	Maximum 10
Eggshell	10 to 25	10 to 35
Satin	20 to 35	Minimum 35
Semigloss	35 to 70	
Gloss	70 to 85	
High Gloss	Minimum 85	

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. Non-ferrous metals, except as specified.
B. Factory prefinished items as specified.
C. 05 50 00/05 12 00 - Field painting of miscellaneous ironwork and structural steel prior to encasement within construction
D. 05 12 00 - Field and/or Shop finishing of structural steel

1.04 QUALITY ASSURANCE

A. Field quality control shall be obtained by review of first finished area or item of each color scheme as required by the Commissioner for color, texture and workmanship. Said area, or areas, when accepted will serve as the minimum project standard for all ensuing work.
B. All workmanship, restrictions, preparation, and the like shall be in accordance with the "Spec-Data" guidelines as published by the manufacturer for the particular product line as well as the standards as promulgated by the Painting and Decorating Contractors Association for high quality institutional applications.
   1. SSPC-SP 1 - Solvent Cleaning
   2. SSPC-SP 2 - Hand Tool Cleaning
   3. SSPC-SP 3 - Power Tool Cleaning
   4. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete

5. EPA-Method 24

C. Before and during the application of interior finishing, varnishing, painting, etc. and until final acceptance by the City of New York of all work covered by the Contract, the Contractor shall, unless otherwise specified in the Contract Documents, provide sufficient heat to produce a temperature of not less than 68 degrees F nor more than 78 degrees F.; further - during paint and coating application, the dew point temperature in the space must be maintained at least 10 degrees lower than the temperature of the surface being painted. Air and surface temperatures shall be maintained within the parameters set forth in the manufacturer's printed application instructions.

D. Regulatory Requirements
1. 2008 New York City building code.
2. New York State Department of Environmental Conservation - Part 205 in "Architectural Surface Coatings" - for Volatile Organic Compounds (VOC).
3. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Construction Industry Standards (29 CFR 1926/1910), Revised 10/1/79, Washington, DC.
4. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Construction Industry Standards Part 1926.62, Lead Standard.

E. All coatings furnished for the work of this project shall comply, without exception, to the following and, where practical, carry the "GreenSeal" labeling:
1. All paint used is zero or low VOC latex paints and primers not to exceed 10 grams per liter for interior coatings and 50 grams/liter for exterior coatings.
2. Solvent based paints, high-performance coatings and the like shall have VOC levels less than 250 grams/liter.
3. Water-based paints must not be formulated with aromatic hydrocarbons, formaldehyde, halogenated solvents, mercury or mercury compounds, or tinted with pigments of lead, cadmium, chromium VI, antimony and their oxides.
4. Paints shall be formulated without methylene chloride, tolulene, ethyl benzene, vinyl Chloride, naphthalene, 1,2-dichlorobenzene, phthalates, isophoron, 1,1,1-trichloroethane, methyl ethyl keton, methyl isobutyl ketone, acrolein, acrylonitrile and ethylene glycol, all of which pose threats to human health.
5. All stains shall comply with **GS-47 Standard**, First Edition, September 18, 2009

F. VOC Content: Determine VOC (Volatile Organic Compound) content of solvent borne and waterborne paints and related coatings in accordance with EPA Method 24 or ASTM D 3960.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the

like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Certification of specification compliance with manufacturer's certificates and test reports as may be required by the Commissioner.

B. 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, and storage, as applicable for each of the materials specified.

C. Samples
   1. Initial Selection: Submit manufacturer's color charts for each type of finish for approval by the Commissioner. Verify colors specified with manufacturers' color charts for availability and notify the Commissioner if any discrepancies should occur.
   2. Verification prior to installation
      a. When required by Commissioner, submit, without cost to the City of New York, two samples of each color and material on 12 inch by 12 inch hard-board.
      b. Submit two samples of finish on concrete masonry, drywall, metal or other surfaces as required until acceptable color, sheen and texture are achieved.
   3. Submit samples of finished (stained and painted) wood in triplicate for approval. Samples shall be 4 inches by 8 inches samples of the species of wood specified, stained and/or painted as required and clearly labeled with type of coating, amount of coats applied, etc.
   4. All samples shall be labeled; and include the following information:
      a. Manufacturer's name
      b. Type of paint/stain/hardener
      c. Manufacturer's stock number
      d. Color: name and number
      e. Instructions for reducing, where applicable
      f. VOC content

D. Provide field samples of finish and refinish operations at locations directed "on-site" for approval prior to start of any finish work.

E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Each container of material delivered to the project site shall contain label with the following information contained thereon:
   1. Manufacturer's name and location.
   2. Type of Paint/Stain/Hardener (type of coating).
   3. Manufacturer's stock number.
   4. Color: Name and Number
   5. Instructions for reducing, where applicable.
   6. Label analysis including solids (weight and volume); component mix; flash point; VOC analysis; viscosity and like components as well as any and all restrictions on use.

B. Sampling of Materials:
   1. When requested by the Commissioner, obtain test samples from material stored at project site or source of supply.
   2. Furnish from materials designated by the Commissioner:
      a. 1 quart (0.946 liters) - From batches of 50 gallons (37.84 liters) or less
      b. 2 quarts (1.892 liters) - From batches over 50 gallons (37.84 liters).
   3. Select samples at random from sealed containers.

C. Store all materials in designated spaces in a manner which meets the requirements of applicable codes and fire regulations. When not in use, keep such spaces locked and inaccessible to those not employed under this Section. Each space shall be provided with a fire extinguisher of Carbon Dioxide or Dry Chemical type bearing the label of the National Board of Fire Underwriter's and tag of most recent inspection.

D. Protect work at all times. Protect adjacent work and materials by suitable coverings or other methods as work progresses.

E. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied. Do not apply finishes in any area where dust is being generated.
   1. Do not apply initial coating until moisture content is within limitations recommended by paint manufacturer.
      a. Test with moisture meter.

1.07 DEFINITION OF TERMS

A. The term "Painting" wherever used herein, means the application of all coatings such as paint, primer, enamel, varnish, shellac, oil, etc. as listed in the Painting Schedules.

B. Standard coating terms defined in ASTM D 16 apply to this Section.
   1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
   2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.

3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

C. The term "Painting" shall also include preparation of surfaces for such applications, and the cleanup as hereinafter specified.

D. The term "Walls" means all vertical surfaces from floor, or top of base, or top of wainscot, to ceiling or hung ceiling.
1. Include pilasters, breaks, jambs, reveals, returns, arches.
2. Include hardboards, pegboards.
3. Include free standing columns, low partitions.
4. Include interiors of all enclosed spaces.

E. The term "Ceilings" means the general overhead horizontal surfaces including cornices, fascias, arches, soffits, stair soffits, metal frame of ceiling lights and the like.

F. Strip and Refinish - Intended for areas with multiple layers of stain, paint or other coatings.

G. Repair and Refinish - Intended for areas with minor damage, water stains.

1.08 SITE ENVIRONMENTAL PROCEDURES

A. Indoor Air Quality: Provide temporary ventilation.

1.09 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
1. Water based.
2. Water-soluble.
3. Can be cleaned up with water.
4. Non-flammable.
5. Biodegradable.
6. Low or preferably no Volatile Organic Compound (VOC) content.
7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
8. Manufactured without compounds that contribute to smog in the lower atmosphere.
9. Do not contain methylene-chloride.
10. Do not contain chlorinated hydrocarbons.
11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 GENERAL

A. All materials used in the work shall be pure, of best quality, and "Top-of-Line" of approved manufacturer.

ALL MATERIALS USED IN THE WORK OF THIS PROJECT SHALL BE V.O.C. COMPLIANT IN ACCORDANCE WITH LATEST RULINGS OF THE FEDERAL EPA AND THOSE ESTABLISHED JURISDICTION AS REFERENCED IN PARAGRAPH 1.04 OF

THIS SECTION.

B. Materials which are specified by brand and make shall be furnished and used as specified.

C. Where other brands are considered by the Contractor as equal or desirable, such brands shall be used only after written approval of the Commissioner is obtained.

D. If proposed brand has not been specified, the name of the manufacturer shall be submitted to the Commissioner for approval, and these materials shall be of such grades and makes as to produce perfect and durable finishes.

E. Paint used for all interior work shall contain an anti-mildew additive which shall be lead free. Paint shall contain less than 0.06 percent lead by weight (of total non-volatile solids).

2.02 ACCEPTABLE MANUFACTURERS - PAINT

A. Benj. Moore (Water Based Eco-Spec)
B. Sherwin-Williams (Harmony)
C. PPG Industries (Pure Performance)
D. Pratt & Lambert (Pro-Hide Gold)
E. Glidden/ICI Industries (Deluxe Lifemaster)
F. California Paints (Elements/Envirotech)

2.03 ACCEPTABLE MANUFACTURERS - SPECIAL COATING

A. Special Coating for Women's Toilet and Locker Rooms - Coating system shall be a durable and cleanable multi-colored or tone-on-tone water-based paint system for walls and shall be similar and equal to Scuffmaster "Armor" formulated with polyurethane plastic and fortified with DuPont Kevlar and shall conform to the following:.

1. Maximum VOC: Less than 150 g/l Laboratory Analysis
2. Fire Rating:
   a. Base Coat - Class A or I ASTM E-84-91a
   b. Pattern Coat - Class A or I ASTM E-84-91a
3. Scrub Resistance: More than 25,000 scrub cycles ASTM D 2486
4. Stain Removal: Excellent Rating (using Graffitimaster cleaner) 4-Hour Open Spot Test
5. Five Year Limited Warranty
6. Finish Appearance: Textured with speckle or short string pattern coat; pattern coat has semi-gloss sheen (30-40% gloss at 60° angle)

System shall consist of a combination of suitable primers, base coat and finish coat, in general, with such preparation as may be required to smooth and prepare substrate for coating operations as per schedule contained herein.

B. Dry Fall Out Spray System for exposed structure and decking and elsewhere scheduled shall be similar and equal to Sherwin Williams "Acrylic Dry Fall Out Spray (B42 Series)"; MAB Paints "Master Painters Dry Fall Latex"; ICI "Spraymaster Pro"; PPG "Speedhide Super Tech WB Acrylic Dry Fog" each self-priming and each applied

in 2 coats to a dry mil thickness of 3.0 minimum (per coat) in color and sheen as selected by the Commissioner.

C. Brick Masonry Paint: Sherwin Williams Product No. B28W00300, PrepRite Interior Masonry Primer White applied at 230 sq ft/gal @ 7 mils wet; 3 mils dry; top coat system with 2 coats of Harmony B05W00951 with each coat applied at 350-400 sq ft/gal @ 4 mils wet; 1.7 mils dry

2.04 MISCELLANEOUS MATERIALS

A. Turpentine, mineral spirits and other solvents and thinners shall be pure, of highest grade and approved manufacture.

B. Shellac shall be fresh, first grade quality white shellac.

C. Poultice: For removal of paint from existing surfaces, "poultice method": "Peel-Away" product in suitable formulation for intended use as manufactured by Dumond Chemical.

D. Brushes, rollers and other application tools as required compatible with the nature of the removal chemicals.

E. Scrapers: Standard and specially fabricated for removing softened paint when poultice method is used. All metal scrapers shall have rounded corners so as not to gouge wood surfaces.

F. Steel wool and hand sanders for removing paint from crevices and depressions in wood following poultice treatment.

2.05 MIXING

A. All paint shall be thoroughly mixed, the mixture shall be of uniform color and consistency, and shall be in thoroughly strained condition before being applied.

B. Thinning will not be permitted unless the manufacturer's directions require same for the method of application to be used (e.g., brush, roller or spray).

C. Provide galvanized iron pans of suitable size in which all material transfer and mixing shall be done.

2.06 PIPE COATINGS

A. Piping designated to receive "Hi-Gloss" color will receive "OSHA" Calibrated Safety Colors over primer as required for same.

B. Insulated pipe shall be cleaned and primed to receive said coating as scheduled.

C. Pipe shall be canvas wrapped if necessary to insure adherence of coatings to same.

2.07 EXTERIOR SURFACES

A. All items of structural steel and miscellaneous iron as defined in Part 1 herein as well as mechanical, electrical and plumbing equipment and other metals exposed to the weather and not factory finished or non-corrosive metal.

1. Factory primed items:

a. Touch up by erector using compatible primer systems.

b. Finish - Tnemec "Series 1074 or 1075, Endura-Shield" applied to shop primed architectural steel systems as specified under Section 05 12 00 each to a 4.0 dry mil thickness.

NOTE: It is this Contractor's responsibility to coordinate color compatibility of special primer system with top coating to eliminate possibility of bleed through or provide a 3.0 dry mil thick coating of Tnemec "Series 18" or equal "DMT" primer system.

2. Galvanized surfaces - 1 coat "DMT" type primer, 2 coats aliphatic polyurethane finish as per 1.b above in spectral finish as selected.
3. Aluminum - 1 coat zinc chromate primer, finish as for A.2 above.
4. Pre-primed surfaces, touchup abraded and damaged spots and coat as for A.2 above.
5. Cast Iron, new or existing - See Section 05 74 11

2.08 INTERIOR SURFACES

A. Concrete
1. Concrete ramps shall receive an epoxy coating system with broadcast silica sand for non-slip finish. System shall be a 2 coat operation over prepared substrata.

B. Gypsum Drywall Work -
1. Regular Work - full prime coat plus 2 coats of latex coating on walls in sheen specified and FLAT on ceilings soffits and fascias.
2. Special Coatings, as required, shall be as specified elsewhere in this Section.

C. Concrete Masonry
1. Regular - 1 coat latex block filler, 2 finish coats of latex enamel.
2. Special Coating system shall be as specified elsewhere in this Section.

D. Metals - repair all abraded spots and spot prime preprimed surfaces with compatible materials and treat all surfaces as follows:

Coordinate requirements for this work with those specified in Divisions 21 through 28.

1. Dry Spaces
   a. Ducts, piping, conduits and related items in finished spaces - 1 coat primer, 1 coat finish latex SATIN enamel.
   b. Ducts, piping, conduits and related items in exposed and painted areas - 1 coat dry fallout spray.
   c. Preprimed surfaces - prepare as above, 2 finish coats latex SATIN enamel.
2. Wet Spaces
   a. All items as above shall receive primer coat compatible with surface to be painted and top coated with 1 coat of epoxy polyamide coating as manufactured by the nominated paint supplier for the project.
3. Metal decking, structural steel and related supporting items shall be coated as per D.1 or .2 above depending upon location.

4. Steel stairs and railings - prepare as above, 2 coats latex enamel finish, GLOSS.
5. Doors, frames and the like shall be finished as for "dry" or "wet" spaces above.

E. Plaster/Stucco, where scheduled to be coated - 1 coat "pva" sealer, 1 top coat of coating as per B. above. NOTE: pH shall be tested and if determined to be outside of limits set by nominated paint manufacturer, provide "seal" coat as recommended by said paint manufacturer; coordinate with Section 09 24 00 for plaster composition and restrictions.

F. Wood: Painted - 3 coats, 1 primer, 2 latex enamel.

G. Exposed Overhead Structure and Surfaces in all areas where exposed structure is scheduled to be painted. This includes exposed structural steel, exposed composite metal deck, exposed miscellaneous framing, all Mechanical and Electrical Work, and all miscellaneous ferrous metal materials.

NOTE: "Mechanical Work" includes sheet metal ductwork, diffusers, return air grilles, sprinkler piping and any other miscellaneous mechanical items. Painting these items requires cleaning surfaces to remove dirt, grease, etc., and touch up of factory primers.

1. 2 coats of dry fall out spray. Apply each coat at 3.5 to 4.0 mils wet to produce a D.F.T. of 2.0 mils per coat.

H. Conduit Exposed in Finished Rooms: 1 coat galvanized iron primer; Paint in with wall finishes.

I. Insulated Pipe and PVC Pipe Exposed in Finished Rooms: 2 coats finish coating as for gypsum above - Colors to be selected .

J. Uninsulated Ferrous and Non-Ferrous Pipe Exposed in Finished Rooms:
1. 1 coat of zinc chromate primer
2. 2 coats of RUST RESISTANT ENAMEL (Satin) - color to be selected.

K. Skylight Curbs, Screens and Framing: Apply appropriate primers to ferrous metals and apply: 2 coats of rust resistant enamel Finish - Each applied at 3 mils wet.

2.09 PAINTING OF EXPOSED MECHANICAL AND ELECTRICAL WORK - Coordinate with Divisions 21, 22, 23 and 26.

A. In general, the exposed items in all areas of the Work are painted in with the wall or ceiling surfaces and the specifications listed above cover the respective surfaces.

B. Painting under the Work of this SECTION is not required on:
1. Any mechanical materials in mechanical rooms.
2. Any electrical materials in electrical closets.
3. Electrical wiremold or bus duct which has a factory finish.

C. Painting required under the Work of this SECTION covers the following:
1. Paint all fan coil unit enclosures, radiation covers, grilles and registers in walls and ceilings, fire extinguisher cabinets, hose cabinets, etc., not having factory applied finish. A factory applied prime coat is not

a finish. Refer to the mechanical specifications to determine what items are only primed and will, therefore, require field finish under the work of this SECTION.

2. Paint all exposed electrical conduit and panelboards in all areas of the Work in with the wall finish in each room.
3. Paint all exposed mechanical piping which runs vertically or horizontally on wall surfaces.

D. Painting in Mechanical Rooms:
1. The omission of painting in mechanical rooms as listed above under "B" is only referring to General Contractor's painting.
2. Painting of mechanical room materials may be required to be performed under the Mechanical Work by the Mechanical Trade. See requirements listed in Division 23 for materials, finishes and colors to be installed by the Mechanical Trades.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

NOTE: Specific attention is directed to Sections 04 20 00 and 09 29 00 wherein tolerances, finish levels and surface preparation requirements are outlined.

3.02 PREPARATION OF EXISTING SURFACES

A. Minor plaster repair (Painter's Repairs) work includes removing all loose, friable, raised or uneven existing plaster patches, preparing and filling minor cracks (1/16 inch and less) or small holes (such as those from hardware) in the plaster with "Durabond" set type material mixed with an acrylic bonding agent as preparation for repainting. Reinforce crack larger than hairline with fiberglass tape embedded in patching material. Sand all repairs smooth. These repairs shall be performed on all plaster surfaces.

Further, all plaster surfaces shall be thoroughly washed, rinsed and prepared in strict accordance to the recommendations of the paint manufacturer and CERTIFICATION TO THIS FACT SHALL BE DELIVERED TO THE COMMISSIONER PRIOR TO START OF COATING OPERATIONS. Coating system shall be as scheduled.

B. Gypsum Drywall - Dry, smooth sanded, clean and free of dust, dirt, powder residue, grease, oil, wax or other contaminants such as flaking or peeling paint. Dull glossy old surfaces to be lightly sanded prior to coating. Patch holes and cracks with spackle and sand smooth and spot prime prior to application of coating system.

C. Interior Wood trim scheduled and/or shown to remain in the finished work shall be touched sanded to remove all unevenness, after scraping or stripping, refinish as scheduled. The work in general includes, but is not limited to - existing bases, chair rails, all window trim, picture moulds, ornate crowns, ornate moulds and the like.

D. Exterior Wood - surfaces in good condition shall be free of dirt, mildew, loose paint and the like. Excessive chalking and/or dirt may be removed by washing with warm water and a mild detergent. Glossy surfaces, touch sanded. Structural weaknesses repaired and openings permitting passage of water sealed with a butyl or latex caulk prior to coating. Surfaces in poor condition must be scraped, sanded or burned. Paint in these areas shall be removed at least 12 inches beyond the failing area. Prime and then complete coating operations.

Poultice method: Apply, materials in conformance with manufacturer's instructions. Dwell time will be determined by mockup procedures. Scrape softened paint films from the surface using scrapers conforming the requirements for each architectural surface.

All paint layers that are cracked, delaminated, alligatored, wrinkled or otherwise defective must be removed. Reapply poultice as required until either all layers are removed or the remaining paint film is smooth, flat and without defects and in accordance with the standards established in the mockup.

E. Metal - Remove all chipped, peeling or blistering paint by hand or power tool methods. Any other surface contaminants shall be removed as for new work preparation. Excessive chalking removed by sanding. Mildewed areas scrubbed with solution of 1 tablespoon of dry powdered laundry detergent and 1 quart of hypochlorite type household bleach to 3 quarts of warm water, wear protective gear during operation. Allow entire surfaces to dry prior to coating operations.

Painted, galvanized surfaces - If sound, treat as above; if glossy, cut gloss by sanding; if surfaces have peeled and are devoid of finish, treat as for new surfaces as specified hereinafter.

3.03 WORKMANSHIP AND APPLICATION

A. Mix and apply all materials in strict accordance with the manufacturer's instructions and shall be performed by experienced mechanics trained in the application of the specified finish materials.

B. Spread all materials evenly without runs, sags or blemishes.

C. Surface preparation, both initial and intermediate, shall include any required sanding, steel wool wiping, or other such treatment to even out any imperfections in base substrate before application of ensuing coats. Further, thoroughly clean, smooth and properly

prepare all surfaces scheduled to receive finishing and/or exposed to view in the finished construction. Surfaces shall be dust and dirt free. Surface conditions and substances which may bleed through and which cause non-uniformity of finish or otherwise may spoil the final appearance desired by the Commissioner or affect the durability of the finish shall be removed, primed, or otherwise treated, as necessary to insure full coverage.

D. Prior to finishing, fill all holes, dents, joints, cracks, and irregularities in surfaces scheduled for paint finish with an approved spackle mixture suitable for the material and purpose. When dry these areas shall be sandpapered smooth and flush with adjoining surfaces.

E. Wash metal surfaces with mineral spirits to remove any dirt or grease before applying materials. When rust or scale is present use wire brush or sandpaper. Clean before painting. Clean coats of paint that become marred. Touch up with specified primer.

F. Where multiple coats of paint are specified, tint each preceding coat.

NOTE: Primer coat shall be tinted; first finish coat of selected color. Second finish coat subject to modification by the Commissioner based upon "dry" appearance as per Paragraph 1.03 herein.

G. All coats shall be thoroughly dry before applying succeeding coats.

H. Shellac all pitch pockets, streaks and knots. Putty all nail and similar holes or defects in exterior and interior finish woodwork with whiting putty, colored as necessary.

I. Hardware, accessories, fixtures and other items installed prior to painting, shall be removed, protected and replaced after painting.

J. Do no exterior painting while surface is damp, or during rainy or frosty weather.

K. For shop primed material follow applicable specification for intended use as per schedule.

L. Back prime all wood work with single coat of stain primer prior to erection. Seal all cut edges. Runs on faces not permitted.

M. Leave all parts of moldings and ornaments clean and true to details with no undue amount of paint in corners and depressions.

N. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.

O. Apply primer on all work before glazing.

P. Refinish whole surface area where portion of finish has been damaged or is not acceptable.

Q. When galvanized steel is shop or field welded the damaged zinc areas shall be repaired as follows:
   1. Wire brush all damaged areas to shiny metal.
   2. Apply two coats (each to 2.0 dmt) of 95% zinc rich paint to all cleaned and prepared surfaces.

3.04 APPLICATION - Scuffmaster Coating

A. Manufacturer-approved painting contractors only.

1. Base coat can be rolled or sprayed.
2. Pattern coat is spray-applied using proprietary equipment.

B. Coverage Rates:
1. Base coat - approximately 300 sq. ft. per gallon
2. Pattern coat - approximately 600 sq. ft. per gallon (standard colors)

3.05 CLEANING

A. Remove spilled, splashed, or splattered paint from all surfaces. Touchup and restore finish where damaged.

B. Do not mar surface finish on item being cleaned.

C. Leave storage spaces used in the work of this Section clean and in proper condition for required usage originally intended.

3.06 WASTE MANAGEMENT

A. Separate waste in accordance with the Waste Management Plan. Set aside extra paint for future color matches, or reuse by City of New York.

B. Where local options exist for leftover paint recycling, collect all waste paint by type and provide for delivery to recycling or collection facility.

C. Close and tightly seal all partly used paint and finish containers and store protected in well-ventilated, fire-safe area at moderate temperature.

D. Place empty containers of solvent-based paints in areas designated for hazardous materials.

E. Do not dispose of paints or solvents by pouring on the ground. Place in designated containers for proper disposal.

End of Section

SECTION 10 21 00

TOILET COMPARTMENTS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of floor mounted, overhead rail braced polymer toilet compartment enclosures and doors as well as prefabricated shower compartments for new Women's toilet/shower room for this project as required by the schedules, keynotes and drawings.

Provide grab bars in all handicapped compartments using material as specified herein.

Color shall be selected from full range of premium colors and designer colors.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 10 28 00 - Toilet accessories except as noted herein

1.04 QUALITY ASSURANCE

A. The manufacturer of the work required under this Section must show that he is engaged in and has been manufacturing this type of work for a period of not less than 3 years.

B. All work herein shall comply with the requirements set forth in the reference standards. The most restrictive shall apply.

1. National Fire Protection Association 101 Life Safety Code 2003 Edition, Chapters 5 and 10.
2. ANSI A117.1-2003 Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
3. International Code Council, International Building Code, 2300 Edition.
4. Title 24, California Code of Regulations, Parts 2, 3, and 5.
5. ADA, Accessibility Guidelines for Buildings and Facilities, Federal Register Volume 56, Number 144, Rules and Regulations.
6. American Society for Testing and Materials Standards:
   a. ASTM E 84-01 Standard Test Method for Surface Burning Characteristics of Building Material.
   b. ASTM D 2794-93(1999)e1 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

c. ASTM D 2197-98(2002) Standard Test Method for Adhesion of Organic Coatings by Scrape Adhesion.
d. ASTM D 6578-00 Standard Practice for Determination of Graffiti Resistance.

C. All polymer materials shall conform with the 2008 New York City Code requirements, except a flame spread rating of not more than 200 and a smoke density rating of not less than 75 or a smoke developed rating of less than 450 may be approved.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Product data.
B. Shop drawings showing all plans, elevation and details and showing adjoining materials and fastenings.
C. Color, construction, brackets and hardware samples. Color samples shall show entire range of stock
D. Certification of specification compliance.
E. The Contractor shall take all necessary field measurements prior to fabrication and installation work and shall assume complete responsibility for accuracy of same.
F. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PERFORMANCE REQUIREMENTS

A. Graffiti Resistance: Partition material shall have the following graffiti removal characteristics when tested in accordance with ASTM D 6578-00 Standard Practice for Determination of Graffiti Resistance in accordance with Section 9, "Graffiti Removal Procedure Using Manual Solvent Rubs": Five (5) required staining agents shall be cleaned off material.
B. Scratch Resistance: Partition material shall have the following characteristics when tested in accordance with ASTM D 2197-

98(2002) Standard Test Method for Adhesion of Organic Coating by Scrape Adhesion, using Gardner Stock #PA-2197/ST pointed stylus attachment on scrape tester: Maximum Load Value shall exceed 10 kilograms.

C. Impact Resistance: Partition material shall have the following characteristics when tested in accordance with ASTM D 2794-93(1999)e1 Standard Test Method for Resistance of Organic Coating to the Effects of Rapid Deformation (Impact), using .625" hemispherical indenter with 2-lb impact weight: Impact Resistance: Maximum Impact Force value shall exceed 30 inch-lbs.

D. Fire Resistance: Partition material shall comply with the following requirements, when tested in accordance with ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:
   1. Smoke Developed Index: Not to exceed 450.
   2. Flame Spread Index: Not to exceed 75.
   3. Material Fire Ratings:
      a. National Fire Protection Association (NFPA): Class B.
      b. International Code Council (ICC): Class B.

1.07 MANUFACTURER GUARANTEE/WARRANTY TERMS - Ten-year limited warranty for panels, doors, and stiles against breakage, corrosion, delamination, and defects in factory workmanship.

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.
   2. Water-soluble.
   3. Can be cleaned up with water.
   4. Non-flammable.
   5. Biodegradable.
   6. Low or preferably no Volatile Organic Compound (VOC) content.
   7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
   8. Manufactured without compounds that contribute to smog in the lower atmosphere.
   9. Do not contain methylene-chloride.
   10. Do not contain chlorinated hydrocarbons.
   11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 MANUFACTURE

A. Toilet partitions, and/or screens shall be solid 1 inch thick plastic as manufactured by -
   1. Scranton Products Company, Scranton, PA
   2. Knickerbocker (Plastique SP)
   3. Global (HDPE)

4. PSISC/Columbia
or approved equal.

2.02 HEIGHT ABOVE FINISHED FLOOR

A. Toilet Compartment - 70 inches unless otherwise shown; Pilasters, 82 inches high.

B. Screens - urinal, 60 inches; entry, 70 inches.

2.03 MATERIALS

A. All materials, panels, doors, pilasters, screens, and benches shall be fabricated from polymer resins under high pressure forming a single component section that is waterproof, corrosion-proof, impact-resistant, and non-absorbent, and which has a self-lubricating protective plastic glaze coating over all surfaces that resists marking with pens, pencils, lipsticks, and other writing or marking implements.

2.04 CONSTRUCTION

A. All partitions shall be 1 inch thick, with all edges machined to a radius of 0.250 inches and all sharp corners removed. All pilasters shall be 82 inches high and fastened to 3 inch high, 18 gauge stainless steel shoes by means of theft-proof stainless steel sex bolts.

2.05 HARDWARE AND ACCESSORIES

A. Each toilet compartment shall be complete with all hardware, door hinges, latch stop and keeper, and all necessary fittings and fastening for a complete installation.

B. Door hardware:

1. Hinge: Cast Stainless Steel Vault Type Hinge. Hinge shall be made of Type 304 Stainless Steel and shall have a Satin finish. Hinge shall be gravity type for self-closing action and shall be fully adjustable up to 360 degrees. Pivot pin shall operate on Stainless Steel Ball Bearings and a Nylon Cam. Hinges shall provide emergency access by lifting the door. Hinges shall be pre-drilled for mounting to door and pilaster with Stainless Steel Through-Bolts. Each Hinge is to be packaged in a separate carton, and is to be labeled by stock number, manufacturer, and left or right hand. Factory set hinges to a full close position unless otherwise noted on the drawings and/or directed by the Commissioner. On doors over 24 inches use a oversized outswing noted wrap-around hinge.

2. Equip each door with 1 coat hook/bumper of heavy duty Stainless Steel with rubber bumper. Handicapped doors also include 1 door pull and 1 wall stop.

3. Fabricate door strike and keeper from heavy aluminum extrusion (6063-T6 Alloy) with clear anodized finish with wrap around flange surface, mounted and thru-bolted to pilaster with one-way stainless steel sex bolts.

4. Door latches - integral latch with 3/8 inch stainless steel slide bolt. Provide emergency access provisions on all

latches to handicapped compartments.

C. Provide aluminum strip on bottom of all panels and doors.

D. Mounting Brackets

1. Furnish full length continuous wall bracket (6063-T6 Alloy) with mill finish not less than 1.685 lbs. per linear foot for use for all panels to pilaster, pilaster to wall and panel to wall connections. Predrill wall brackets by manufacturer with holes spaced every 12 inches along full length of brackets.

2.06 GRAB BARS

A. Furnish 1-1/4 inch nominal diameter grab bars in design configuration shown on abutting walls and within handicapped toilet stalls as indicated on drawing and in accordance with Details.

B. Grab bars shall be fabricated of 18 gauge, Type 304 stainless steel tubing welded to 11 gauge flanges and protected by concealed 13 gauge stainless steel mounting plates. Finish - Satin; Approved Manufacturers: TSM; Bobrick; ASI; Parker.

C. Grab bars, fasteners, and anchors shall be capable of sustaining a force of 250 pounds at any point and from any direction.

D. Meet requirements of ANSI, latest edition, for "structural Strength" for grab bars. Provide 1-1/2 inch clearance between grab bar and wall surface.

E. Coordinate with companion construction trades to insure that proper blocking supports are incorporated into partition construction.

NOTE - if toilet partition panels require additional reinforcement to sustain the design load specified above, manufacturer to provide.

2.07 SHOWER COMPARTMENTS

A. Provide prefabricated shower compartments similar and equal to Best Bath LSS3838B5T conforming to the following:

1. Three Piece Unit Assembly
   a. Gelcoat Finish:
   b. Sanitary ware grade gelcoat. Minimum cured thickness 0.015 inch.
   c. Barrier Coat: Ceramic fiber filled polyester resin coating to enhance gloss and surface hardness.
   d. Structural Layer: Fiberglass laminate with minimum 15 percent fiberglass content and filled resin completely encapsulating a 3/8 inch plywood core on most flat surfaces, to provide stiffness as well as backing for grab bar and seat anchoring.
   e. Floor of 3/16 inch thick fiberglass laminate with an integral level support compound bonded to it.
2. UL Compliance - Flame Spread Rating: Less than 75 in accordance with ASTM E 162. Smoke Generation: Less than 450 in accordance with NFPA 258.
3. ACCESSORIES

a. Mixing Valve: Symmons 15-1-X-FG brass bodied pressure balancing 3-port valve with lever handle valve and plumbing elbow, polished chrome finish.
b. Glide bar Kit: Standard vertically mounted 28" glide bar with on/off hand shower and 60" hose, polished chrome finish and cradle with adjustable height setting for hand shower.
c. Soap Dish: One (1) white fiberglass, surface mounted soap dish, mounted at the sitting level.
d. Folding seat: 32" x 16", White phenolic seat surface, stainless steel frame and swing down legs.
e. Grab Bars: Three (3) Straight Grab Bars; (1) 27" Grab Bar mounted horizontally on plumbing side wall, (1) 18" Grab Bar mounted vertically on plumbing wall, (1) 12" Grab Bar mounted horizontally on back wall; Grab Bars will be 1-1/4 inch diameter, stainless steel 18 gauge, satin finish.
f. Shower Curtain Rod: 37.5 inches, stainless steel, 18 gauge, 1 inch OD, with mounting brackets.
g. Shower Curtain, 10ga vinyl, 42 inches by 74 inches, with rings.
h. Drain: No caulk, brass body with polished stainless steel strainer.
i. T-Shaped EPDM Rubber WaterStopper, collapsible, 3 feet long with large end caps

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.
B. Verify correct spacing and size of plumbing fixtures for compliance with ADA-AG as per Paragraph 1.03 herein.

3.02 ERECTION - GENERAL

A. Arrangement of enclosures and sizes shall be as indicated on the drawings, and the work shall be laid out from actual dimensions at the site.
B. Erect units in strict accordance with manufacturer's instructions and in accordance with approved shop drawings, so as to provide for a firm installation, straight and plumb, securely attached to floors, walls and ceilings and with all horizontal lines level.
C. Attach brackets to adjacent wall construction through use of stainless steel expansion bolts or toggle type devices spaced at 12 inch intervals, staggered, along the full length of bracket depended upon substrates encountered.
D. Through bolt wall brackets to panels and pilasters with one-way stainless steel sex bolts.
E. Anchor dividing partition panels to pilaster stiles which shall be

adequately reinforced to receive dividing partition panels.

F. Clearances
   1. Provide clearances of not more than 1/2 inch between pilasters and panels, panels and walls, and not more than 1 inch between pilasters and walls.
   2. Clearance at vertical edges of doors shall be uniform from top to bottom and shall not exceed 3/16 inches. Doors shall be free of warps and bends.

G. Conceal all evidence of drilling, cutting and fitting of the finish surfaces.

3.03 GRAB BAR INSTALLATION

A. Install grab bars at heights above floor, and in locations related to plumbing fixtures as shown on the Drawings and in accordance with ANSI requirements.

B. Install true and plumb.

3.04 ERECTION/CLEANING SHOWER COMPARTMENTS

A. Install in accordance with manufacturer's instructions which are different from those of conventional one piece shower units in that the unit may be installed directly on top of the flooring and still meet a 1/2 inch maximum curb height requirement. To allow for this the following needs to be done:
   1. The hole around the drain needs to be 8 inch diameter x ¾ inches deep.
   2. The unit needs to be adhered to the floor using an epoxy adhesive that is provided by the shower manufacturer.
   3. Flooring needs to be brought up to the bevel on the curb.

B. Install barrier free bathing units level, plumb, and square with flat wall surfaces.

C. Touch-up minor damaged surfaces caused during installation. Replace damaged components as directed by Commissioner.

D. Test and adjust mixing valves and hand held showers for proper and efficient operation, including water temperature, pressure, and volume.

E. Clean surfaces in accordance with manufacturer's instructions.

F. Do not use abrasive cleaners, metal scrapers, or wire brushes.

3.05 PROTECTION

A. Protect all adjacent work and finished surfaces from damage caused by the installation of the work of this Section.

B. Damage caused by the handling, storing or installation of the work herein, or failure to provide adequate protection of surrounding areas shall be repaired or replaced at no additional cost to the City of New York.

3.06 ACCEPTANCE AND CLEANUP

A. After erection and until final acceptance of the buildings, protect all work from damage of any nature.

B. Any part or parts damaged shall be replaced by the Contractor without cost to the City of New York. Such replacements shall include adjacent work that may be incidentally damaged.

C. All work shall be turned over to the City of New York in a clean, properly installed, true to line and plumb condition.
D. Adjust hardware and leave in perfect working order.
E. Remove all protective masking and clean surfaces, leaving them free of soil and imperfection.
F. Upon completion of work, all equipment, remaining material and rubbish resulting from the work of this section shall be removed from the premises.

3.07 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.
B. Set aside and protect materials suitable for reuse and/or remanufacturing.
C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 10 22 13

WIRE MESH CONSTRUCTION

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of wire mesh construction for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide wire mesh partition systems for space enclosure as shown and/or required by the Contract Drawings.
2. Provide wire mesh security cage and door to prevent access from 1st floor to cellar at all stairs.
3. Provide stair mesh infills as detailed on all existing stairs; coordinate with Section 05 50 00 for stair work.
4. Provide swing and sliding wire mesh door units as shown and scheduled.
5. Provide all corner posts, mullions, intermediates, stiffeners, ceiling posts, hangers, sockets and other accessories required to form and support the work of this Section.
6. Make special provisions for locking/latching devices as shown and/or required by hardware schedule and/or directed by the Commissioner.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 05 50 00 - Miscellaneous Metals
B. 09 90 00 - Painting

1.04 QUALITY ASSURANCE

A. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect. Repair and correct mock-up area as required to produce acceptable work.

B. Design Requirements: Design partition system to provide for movement of components without damage, undue stress on fasteners or other detrimental effects, when subject to design loads. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are

complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop drawings showing complete construction details, erection requirements and fastenings.
B. Samples of materials to be incorporated in the work.
C. Certification of specification compliance.
D. This Contractor shall take all necessary field measurements prior to fabrication and installation and shall assume complete responsibility for accuracy of same.
E. Contractor shall hire a professional engineer, licensed in New York State to design all stair infill mesh components as specified in Section 05 50 00 all in accordance with the governing Building Code and subject to approval by the Commissioner.
F. Material Safety Data Sheet (MSDS) must be submitted for each product.

Part 2 - PRODUCTS

2.01 SPECIFICATION STANDARD: For purposes of establishing standards of quality and levels of performance and not for the purposes of limiting competition, the basis of this specification is upon units as manufactured by one of the following and their respective model suitable for the intended application.

A. Wire Crafters
B. Miller Wire Works
C. Newark Wire Works
D. Acorn Wire and Iron Works

Or other members of Woven Wire Products Association in good standing.

2.02 PARTITION MAKEUP

A. Wire: #10, 2 inch x 1 inch retangular mesh in 1-1/4 inch angle frames.
B. Corners: Channel reinforced angles.
C. Intermediates: Channel reinforced flat bars.

D. Door Frames: Standard.
E. Hardware: Manufacturer's standard, coordinate with hardware schedule on drawings.
F. Balance of items as shown on drawings and/or necessary for proper anchorage and fabrication of the work.

2.03 FINISH: Hot dipped galvanized factory finished.

2.04 DOOR/GATES
A. Units shall be both swing and sliding design as scheduled.
B. Construction shall be as shown on the drawings and/or as per manufacturers standards for intended application.

2.05 WOVEN WIRE MESH STAIR INFILL PANELS
A. Mesh infills at railings indicated shall be a woven wire mesh rectangular design composed of rake, transition and standard rectangular panels. Wire shall be 2 inch square #8 gauge mesh factory prefinished with powder coating in color (s) as selected by the Commissioner. Frame shall be flat capped channel frames with welded stand-off tabs; frame shall be a minimum of 1 inch by ½ inch by 11 gauge on 4 sides with cap plate 1 inch by 1/8 inch on all sides; fully welded assembly; grind all welds smooth. Attention is directed to design requirements as part of the submittal requirements.

2.06 Furnish balance of items as shown on drawings and/or necessary for proper anchorage and fabrication of the work.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE
A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION
A. Units shall be installed true to line and level by the manufacturer or his authorized representative in accordance with approved shop drawings.
B. Erect partitions, guards, etc., in a rigid manner, straight and plumb, with all horizontal lines level for partitions and in line with slope of stair for guards.
C. All units shall be adjusted and left in perfect working order.
D. Check all connections, attachments, etc. before leaving job.

3.03 ADJUSTING
A. Adjust hardware and leave in perfect working order.
B. Adjust door hinges, hasps, etc.

3.04 CLEANUP AND PROTECTION

A. All debris resulting from construction operations will be removed daily and upon final completion, all operating parts will be cleaned and all protection removed.

3.05 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 10 28 00

TOILET ACCESSORIES

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. Furnishing of all required toilet accessories and attachment devices, including backplates where required, in accordance with manufacturer and equipment scheduled herein.

Quantity and locations of all accessory items shall be as shown on the drawings.

Coordinate installation of blocking where required to be furnished and installed under Section 06 00 00 or Section 09 29 00 dependent upon material type.

Furnish accessories for handicapped toilet and bath areas so as to comply with ANSI A117.1, applicable barrier board requirements and ADA Act of 2010 whichsoever is most restrictive.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 08 80 00 - Mirrors
B. 09 30 00 - Ceramic Tile Bath Accessories
C. 10 21 00 - Rubber tipped combination hook and bumper
D. 10 21 00 - Soap Dishes, Curtain Rods and Curtains
E. Division 22 - Plumbing - Installation of all accessories

1.04 QUALITY ASSURANCE

A. All materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer, color and/or other pertinent characteristics.
B. Materials shall be stored under conditions recommended by the manufacturer.
C. Items shall be packed separately and marked for the room in which they are to be installed; and all items shall be provided with screws, bolts and other fittings or devices required for proper installation.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Samples of each item specified for approval, each of which will then be installed as part of the project. Display shall be set up at job site.
B. Complete catalog cuts and schedule showing toilet room accessories specified, manufacturer, model number and locations shall be submitted for approval.
C. Manufacturing order shall not be placed until detailed schedule has been formally approved by Commissioner and returned to Contractor.
D. Certification of specifications compliance.
E. Material Safety Data Sheet (MSDS) must be submitted for each product.

Part 2 - PRODUCTS

2.01 STANDARD OF QUALITY AND MANUFACTURER

A. The numbers listed on the drawings shall be considered standard of quality, design, workmanship, metal gauge, capacity and finish.
B. Products furnished by others shall conform in all respects to the specified items and shall receive Commissioners approval.
C. All lockable items shall be keyed alike.
D. Any accessories scheduled herein not shown on the drawings or vice-versa shall be provided. Examine Drawings for items not scheduled and supply same.

2.02 SCHEDULE OF ACCESSORIES - See Drawings

Part 3 - EXECUTION

3.01 INSTALLATION

A. The General Contractor shall assume the installation of all items, and shall assign installation to the trades entitled to same according to local jurisdictional requirements.
B. All accessories shall be set UNDER OTHER Sections of these Specifications in a permanently secure manner, plumb, square and true, using concealed type fittings and fasteners.
C. All drilling and setting shall be done without damage to adjoining work or surfaces. Scratched, damaged or unworkmanlike installations will be rejected.

3.02 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

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SECTION 10 51 00

LOCKERS AND BENCHES

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of the lockers and benches for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide lockers in configuration indicated on the drawings. Provide fillers, bases and closures as required.
2. Provide locker room benches in configurations shown.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification.

1.04 QUALITY ASSURANCE

A. Provide each type of locker produced by a single manufacturer, including necessary installation accessories, fittings, and fasteners.

B. Regulatory Requirements: Where metal lockers are indicated to comply with accessibility requirements, comply with particular state Architectural Access Board requirements and the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution

request procedure shall still be enforced.

A. Submit drawings showing locker types, sizes, quantities, including all necessary details relating to anchoring, trim installation and relationship to adjacent surfaces.
B. Provide color charts showing manufacturer's available colors along with actual samples of paint on metal.
C. Numbering: Locker numbering sequence will be provided by the Commissioner and noted on approved drawings returned to the locker contractor.
D. Certification of Specification Compliance.
E. The Contractor shall take all necessary field measurements prior to fabrication and installation work and shall assume complete responsibility for accuracy of same.
F. Material Safety Data Sheet (MSDS) must be submitted for each product.
G. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer, color and/or other pertinent characteristics.
B. Materials shall be stored under conditions recommended by the manufacturer.
C. Lockers shall not be delivered to the project site until the building is fully ready for locker installation.
D. Protect from damage, dirt and foreign materials during the installation period.

1.07 SPARE PARTS MATERIALS

A. Provide a minimum of 5 percent replacement parts of lockers consisting of - complete latch and handle mechanism; hooks; name plates; and the like as required by the Commissioner.

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.
   2. Water-soluble.
   3. Can be cleaned up with water.
   4. Non-flammable.
   5. Biodegradable.
   6. Low or preferably no Volatile Organic Compound (VOC) content.
   7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
   8. Manufactured without compounds that contribute to smog in the lower atmosphere.
   9. Do not contain methylene-chloride.
   10. Do not contain chlorinated hydrocarbons.

11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 MANUFACTURER

A. For the purposes of establishing standards of quality and levels of performance and not for the purposes of limiting competition, the basis of this specification is upon "Heavy Duty Corridor Lockers" as manufactured by Republic Storage Systems Company, Inc. or equal by Lyons; Pennco; or General.

2.02 LOCKERS

A. Style: 2 person
B. Type: Standard Design
C. Size: 15 inches by 15 inches by 36 inches high
D. Equip all lockers with provision to receive user furnished padlocks.

2.03 FABRICATION

A. Material: All parts shall be made of mild cold rolled sheet steel. All steel to be free from imperfections and capable of taking a high grade enamel finish. Assembly fasteners to be as outlined in Paragraph 2.03.M.
B. Construction: Lockers shall have flat, smooth metal surfaces without warp, dents or distortion. Assembled units shall be rigid and square. Bolts or rivet heads shall not be exposed on faces of doors or frames.
C. Door Frames: 16 gauge formed into deep 1 inch face channel shapes with a continuous vertical door strike integral with the frame on both sides of the door opening. Securely weld cross frame members of 16 gauge channel shapes to vertical framing members to ensure rigidity.
D. Doors:
   1. 16 gauge cold rolled sheet steel formed with a full channel shape on the lock side to fully conceal the lock bar, channel formation on the hinge side and right angle formations across the top and bottom.
   2. Locker doors shall have louvers in the face of each door and be prepared to receive padlock type locking device.
E. Latching: 1 piece, prelubricated, self-contained spring steel latch completely contained within the lock bar, under tension, to provide rattle-free operation. The lock bar shall be of pre-painted, double-channel steel construction. The lock bar shall be held laterally in the door channel by means of non-removable, self-formed retainers pierced from the door. There shall be three latching points for Single tier lockers.
F. Handles: All handle parts shall be made from sturdy zinc die cast material. The fixed case to be attached to the door with two hex head screws and a shock-absorbing stud. The case must fully shield the lifting trigger from below.

The lifting trigger to have two right angle lugs that insert into the lock bar without the use of a fastening device. The lifting trigger to be equipped with rubber silencers at top and bottom to prevent metal-to-metal contact. The padlock attachment with 3/8 inch diameter hole shall be positioned so that the fixed handle case provides a padlock strike. The handle design must be free of openings or surfaces that permit leverage to be applied.

G. Frame Hooks: Frame hooks to accept latching shall be of heavy gauge steel set close in and welded to the door frame. A continuous vertical strike on the door frame shall protect frame hooks from door slam damage.

H. Door Silencers: The impact caused by the door closing shall be absorbed by a soft rubber silencer which is to be securely installed on each frame hook.

I. Hinges: Shall be at least a 2 inches high, 5 knuckle, full loop, tight pin style, securely welded to frame and riveted to the inside of the door flange. Hinges shall be attached with two rivets. Locker doors 42 inches high and less shall have two hinges.

J. The body of the locker shall consist of 24 gauge upright sheets, backs, tops, bottoms and shelves. Tops, bottoms and shelves shall be flanged on all four sides. Backs shall be flanged on two sides. Uprights shall be offset at the front and flanged at the rear to provide a double lapped rear corner. End of row uprights for non-recessed lockers shall be 16 gauge steel.

K. Assembly shall be done by use of special fasteners to provide a solid, shake-proof, semi-permanent fastening which can only be removed by use of tools to replace damaged parts or rearrange lockers. Fasteners shall be zinc plated low round head, slotless, fin neck machine screws and Keps' security nuts.

L. Interior Equipment: Single tier lockers shall have one hat/book shelf; one double prong back hook and two single prong wall hooks in each compartment. All hooks shall be made of steel, formed with ball points, zinc-plated and attached with two bolts or rivets.

M. Number Plates: Each locker shall have a polished aluminum number plate with black numerals not less than 1/2 inch high. Plates to be attached with rivets to the lower surface within the recess handle pocket. Do not mount number plate on door face.

N. Recessed trim shall be provided around all lockers recessed into walls. Trim shall be formed from 18 gauge sheet steel and have a 3 inch face dimension. Trim shall be furnished in lengths as long as practical and attached to lockers with concealed clips. Corner caps shall be integral with jamb trim. Splices in horizontal trim shall be accomplished with concealed splice fingers resulting in a hairline joint. Cover plates at splices and corners and/or exposed fasteners will not be accepted. Trim shall be finished to match lockers.

2.04 STEEL SHEET FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Factory finish steel surfaces and accessories except stainless-steel and chrome-plated surfaces.

C. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond. Use manufacturer's standard methods.

D. Powder-Coat Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard baked-polymer thermosetting powder finish. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.

E. Color: Doors, frames and all body parts shall be finished in a standard color selected from the nominated manufacturer's collection.

2.05 LOCKER ROOM BENCHES - ADA Compliant with and without backs as required by location and positioning within area.

A. Selected hardwood seat and backs with radius on all sides and a two coat lacquer finish

B. Four powder coated steel pedestals

C. Two Steel back brackets to match pedestal color

D. Seat is either 42 inches or 48 inches wide (as shown) x 24 inches deep.

E. Seat height 17 1/2"h

F. Back support height 20" h

G. Approx. overall height (floor to top of bench back) 36 1/2"

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION

A. All items furnished under this section shall be installed true to line and level by the manufacturer or his authorized representative in accordance with approved shop drawings.

B. Installation shall be level and plumb with flush surfaces and rigid attachment to anchoring surfaces.

C. Space fasteners at 36 inches o.c. or less as recommended by manufacturer. Use fasteners appropriate to load and anchoring substrate. Reinforcing plates to be used wherever fasteners could distort metal.

D. Various trim accessories where shown and/or specified including fillers, recess trim, and the like, shall be installed using concealed fasteners. Flush, hairline joints shall be provided at all abutting trim parts and at adjoining surfaces.

E. All benches shall be installed in configurations as indicated on the drawings. Bench pedestals shall not exceed 6 foot centers.

3.03 ADJUSTMENT

A. Upon completion of installation, inspect lockers and adjust as necessary for proper door and locking mechanism operation.

B. Touchup scratches and abrasions to match original finish.

3.04 CLEANUP AND PROTECTION

A. Protect all adjacent work and finished surfaces from damage caused by the installation of the work of this Section.

B. Damage caused by the handling, storing or installation of the work herein, or failure to provide adequate protection of surrounding areas shall be repaired or replaced at no additional cost to the City of New York.

C. All debris resulting from construction operations will be removed daily and upon final completion, all operating parts will be cleaned and all protection removed.

3.05 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

SECTION 10 90 00

MISCELLANEOUS SPECIALTIES

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all miscellaneous work for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide exterior building signage composed of 4 mm aluminum composite panels and pin mounted stainless steel letters. Provide companion blocking and backer system as required.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 06 00 00 - Rough and Finish Carpentry
B. 07 90 00 - Joint Sealants

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.
B. Before starting any work under this Section, all surfaces and attachments to receive work herein shall be inspected as per Part 3, Article 3.01.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution

request procedure shall still be enforced.

A. Shop drawings of all fabricated items showing complete construction details, erection requirements and fastenings.
B. Full size samples of fabricated units to be incorporated in the work. Samples shall be incorporated as part of the contract obligations.
C. Samples of all other materials required to complete the work.
D. Where applicable, Contractor shall take all necessary field measurements prior to fabrication and shall assume complete responsibility for accuracy of same.
E. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the job site in unopened factory sealed containers clearly labeled as to product, manufacturer, color and/or other pertinent characteristics.
B. Materials shall be stored under conditions recommended by the manufacturer.

1.07 COORDINATION

A. Furnish full-size spacing templates for individually bundled letters and numbers for coordination with work of other trades.

1.08 SUSTAINABILITY

A. In the selection of the products and materials of this section as well as for the entire project, preference will be given to those with the following characteristics:
   1. Water based.
   2. Water-soluble.
   3. Can be cleaned up with water.
   4. Non-flammable.
   5. Biodegradable.
   6. Low or preferably no Volatile Organic Compound (VOC) content.
   7. Manufactured without compounds that contribute to ozone depletion in the upper atmosphere.
   8. Manufactured without compounds that contribute to smog in the lower atmosphere.
   9. Do not contain methylene-chloride.
   10. Do not contain chlorinated hydrocarbons.
   11. Contains the least possible of post-consumer or post-industrial waste.

Part 2 - PRODUCTS

2.01 STANDARD OF QUALITY AND MANUFACTURER

A. Manufacturers' name and catalogue numbers are given for the purpose of establishing a standard of quality and not for the purpose of limiting competition. Any substitution for specified manufacturer may be made with the approval of the Commissioner providing the substituted item conforms in every respect to the specified manufacturers' item.

2.02 STAINLESS STEEL - ASTM A 167, AISI Types 302/304 with #4 finish with

vertical grain for exposed surfaces unless otherwise required. 20 gauge face; 24 gauge returns for large letters; Stud mounts - 10-24 stainless steel.

2.03 ALUMINUM COMPOSITE PANELS AND FURRING/ANCHOR SYSTEMS

A. Fire Rated Composite aluminum panels shall be as manufactured by
   1. Reynolds Metals.
   2. 3A Composites USA, Inc.
   3. Mitsubishi Chemical Corp.

   in 3 coat 70% kynar paint finish and in color as selected by the Commissioner.

B. Thickness - 6 mm walls.

C. Aluminum Sheets - 0.51mm, 3003 alloy.

D. Fabrication - aluminum sheeting sandwiching a core of fire rated extruded thermoplastic formed in a continuous process without glue or adhesive.

E. Panel Bow Tolerance - 0.8% maximum of panel dimension in length and width.

F. Side wall fasteners shall be concealed and shall be fully non-corrosive. Provide "zee" runners, "hats" and like connectors as necessary and/or required to complete the installation. Sealant of all joints shall be as specified in Section 07 90 00.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 INSTALLATION

A. Units shall be installed true to line and level by the manufacturer or his authorized representative in accordance with approved shop drawings.

3.03 CLEANUP AND PROTECTION

A. Protect all adjacent work and finished surfaces from damage caused by the installation of the work of this Section.

B. All debris resulting from construction operations will be removed daily and upon final completion, all operating parts will be cleaned and protection removed.

3.04 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

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SECTION 14 42 00

WHEELCHAIR LIFT

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of the platform/wheelchair lift installation for this project as required by the schedules, keynotes and drawings, including, but not limited to the following:

1. Provide vertical platform lift, complete including gates, frames, hardware and the like.
2. Provide all permits and licenses for work and arrangements for and making all inspections and tests required thereby.
3. Balance of work necessary and/or required to complete the total wheelchair lift installation.

NOTE: In all cases where a device or part of the equipment is herein referred to in the singular number, it is intended that such reference shall apply to as many such devices as are required to complete the installation.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to:

A. Provision of proper electrical service including required switch devices of ample capacity to the terminals of the power unit controlled.

B. All necessary recesses, holes, etc. necessary to accommodate wheelchair lift operating equipment, gates, controllers and the like.

1.04 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specification. Correlation of contract requirements is the responsibility of the Contractor.

B. Lift shall be designed, manufactured and installed in accordance with the following standards:

1. American National Standards Institute (ANSI).
2. American Society of Mechanical Engineers (ASME).
3. ADA Accessibility Guidelines (ADAAG).
4. Underwriters Laboratories (UL).
5. 2008 New York City Building Code.
6. National Electrical Code (NEC).
7. American Society for Testing Materials (ASTM).
8. American Welding Society (AWS).

9. Code and rules of the City, State and other Civil Authorities having jurisdiction over the furnishing and installation of this work.

C. All load ratings and safety factors shall meet or exceed those specified by all governing agencies with jurisdiction and shall be certified by a NYS licensed professional engineer.

D. Lift shall be subject to applicable state, local and city approval prior to installation and subject to inspection after installation. Determination of and adherence to these regulations is the responsibility of the lift contractor.

E. Welders certified in accordance with requirements of AWS D1.1 shall perform all welding of all parts.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Shop Drawings showing -
General layout showing required clearances.
All necessary lift controls.
Electrical requirements.

B. Product Data including manufacturer's catalog sheets, specifications and installation for each component specified.

C. Samples of all finishes and colors are to be submitted for selection by the Commissioner.

D. Quality Control Submittals:
1. Installer's Qualifications Data:
2. A list of at least 3 comparable installations which have been in satisfactory operation.
3. Acceptance Test Report

E. Certification of Specification Compliance.

F. Material Safety Data Sheet (MSDS) must be submitted for each product.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle product as recommended by the manufacturer, to protect from damage.

1.07 TESTING

A. The lift shall be designed and tested for a static load safety factor of five times its maximum capacity of 750 pounds in compliance with ANSI A17.1. All components shall be stressed below their yield points at the 3,750 pound test load so that no permanent deformation occurs. The ultimate tensile stress of the materials used, provides an additional safety factor prior to ultimate failure in the event of extreme overload. Materials, such as cast iron, which fail in a brittle mode shall not be used in the lift structure.

B. Load a 6 foot vertical lift unit to 500 pounds and test for 15,000 cycles. No mechanical failures shall occur and no wear that would effect the reliability of the unit should be detected.

1.08 EXTENDED WARRANTY/GUARANTEE TERMS

A. Drive train - 2 years.

Part 2 - PRODUCTS

2.01 SPECIFICATION STANDARD: For purposes of establishing standards of quality and level of performance and not for the purposes of limiting competition, the basis of this specification is upon the Porch-Lift vertical platform lift model PL-S manufactured by ThyssenKrupp Access or equal by Concord or Garaventa in platform size and lift height as shown on the drawings.

A. Machine Tower: 14 ga. steel sheet.
B. Guide Rail: 3" x 2" x 1/8" ASTM A500 grade B steel tubing.
C. Base Frame: 2" x 2" x 1/4" structural steel tubing and angle.
D. Lift Weldment: 3/8" hot rolled steel plate and 2" x 2" x 1/4" wall structural steel tubing.
E. Side Guard Panels: 18 ga. galvanealed steel sheet in 1" x 2" x 14 ga. steel tubing frame.
F. Front Access Panel: 20 ga. galvanealed steel sheet.
G. Platform: 11 ga. steel plate.

2.02 OPERATING CHARACTERISTICS

A. Drive: AC powered ballscrew drive; 1/2 hp, 120 V, 60Hz, instant reversing motor.
B. Number of Stops: Two.
C. Platform Configuration: straight-thru.
D. Maximum Travel: 96 inches, verify in field.
E. Rated Load: 750 lbs. with minimum safety factor of 5X.
F. Rated Speed: 9-12 fpm
G. Platform Size: 36"x48" with 42" high guard panels.
H. Main Power Supply Wiring: Electrical contractor shall provide 115 VAC, single phase, 20 amp, 60 Hz power circuit.
I. Operating Features:

1. Platform Controls: Directional paddle switch, on/off key switch, emergency stop switch with alarm and illuminated alarm button.
2. Landing Controls: Directional paddle switch and on/off key switch; emergency stop switch with alarm, mounted inside gate/door frames.
3. Constant pressure operation.
4. Grounded electrical system with upper, lower and final limit switches and 24 V operating controls.
5. Platform underpanel equipped with obstruction sensors.
6. Non-slip surface on platform floor and ramp.
7. Grab rail on platform.
8. Manual lowering device.
9. Remote emergency lowering switch.
10. Integral ballscrew safety device and electromechanical brake.
11. Pit switch.
12. Upper Landing Gate/Door: 42" high, self-closing gate with VDR™ mechanical interlock and steel sheet insert panel.
13. Lower Landing Door: 6'-8" self closing, flush mount, non-fire rated door with VDR™ mechanical interlock and 27"x67" bronze tinted acrylic vision panel.
14. Automatic Gate/Door openers.

2.03 FINISHES

A. Components shall be prepared with 1) alkaline detergent wash, 2) clear water rinse, 3) iron phosphate coating, 4) clear water rinse and finished with electrostatically applied thermostatic powder coat finish for indoor or outdoor use. Standard color is ivory.

2.04 ELECTRICAL SYSTEMS

A. The electrical contractors shall provide a 115V, single phase, 20 amp, 60 Hz electrical power source connection.
B. Electrical piping and wiring supplied by others.
C. Final electrical connections performed by lift contractor.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.
B. Verify, by measurements at the job site, dimensions affecting the work. Bring field dimensions which are at variance with those on the approved shop drawings to the attention of the Commissioner. Obtain the decision regarding corrective measures before the start of fabrication of items affected.
C. Cooperate in the coordination and scheduling of the work of this section with the work of other sections so as not to delay job progress.

3.02 INSTALLATION

A. Install each wheelchair lift and related equipment required for same in accordance with accepted manufacturer's directions and ANSI A17.1.

B. Install each unit assembly with skilled workmen in strict accordance with the approved shop drawings and other submittals.

C. Unit assembly shall be erected plumb and securely fastened to the building structure.

D. Perform all required field quality control operations as required.

3.03 TESTS AND ADJUSTING

A. Operate lift at full loading, stopping at each landing, traveling in each direction; perform in presence of Commissioner.

B. Adjust all equipment, switches and controls as required for proper operation.

3.04 INSTRUCTION IN USE

A. Instruct City of New York's personnel in the proper use and maintenance of the lift.

3.05 PROTECTION AND CLEANING

A. During shipment and installation, adequately protect surfaces against accumulation of paint, mortar, mastic and disfiguration or discoloration, and damage.

B. After installation touchup, in the field, surfaces of shop primed elements which have become scratched or damaged.

C. Upon completion, remove protection and thoroughly clean work and leave free from discoloration, scratches, dents and other surface defects.

D. The finished installation shall be free of defects. Before final completion and acceptance of the building, repair and/or replace defective work, to the satisfaction of the Commissioner and the City of New York at no additional cost.

E. Clean up all areas of debris, dirt and the like.

3.06 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

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SECTION 21 12 00

FIRE-SUPPRESSION STANDPIPE SYSTEM

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of these specifications as shown or specified should be in accordance with the requirements of the Contract Documents[,General Conditions, Supplementary Conditions, Division 1 - General Requirements].

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to provide a Fire Standpipe System as shown on the drawings and as specified herein.
   1. Alteration to existing fire standpipe system including piping, fittings, valves, and alarms, as indicated on the Drawings and as specified herein.
   2. Provide/maintain a complete temporary standpipe system during construction as required by authorities having jurisdiction and the Commissioner's insurance company, utilizing the existing system.
   3. Painting of piping and valves.
   4. Alteration to and removal of existing siamese connections.

B. General Requirements:
   1. All work shall be properly coordinated with the other trades to avoid conflicts. Refer to the architectural drawings for required ceiling elevations and space clearances and details.
   2. All necessary cutting and patching in floor slabs, roof slabs, walls and ceiling for the Plumbing and Fire Protection work shall be performed by this contractor. Restore to match existing conditions.
   3. Bidders, before submitting proposals, shall visit and carefully examine the area affected by this work to familiarize themselves with the existing conditions and the difficulties that will attend the execution of this work. Submission of a proposal will be construed as evidence that such an examination has been made, and later claims will not be recognized for extra labor, equipment, or materials, required because of difficulties encountered which would have been foreseen had such as examination been made.
   4. All materials and workmanship shall be guaranteed for a period of one year from date of final acceptance of this work. Instruct the commissioner's personnel in the proper operation and serving of the system.
   5. Secure all required permits and approvals and transmit same to the Commissioner. Contractor shall be responsible for all fees.

1.03 RELATED WORK

A. Fire-Suppression Sprinkler System - Section 211300

1.04 QUALITY ASSURANCE

A.	A.N.S.I.	-American National Standards Institute
B.	A.W.W.A.	-American Water Works Association
C.	F.S.	-Federal Specifications
D.	N.F.P.A.	-National Fire Protection Association Chapter 14 and 20
E.	F.M.	-Factory Manual
F.	I.R.I.	-Industrial Risk Insurers
G.	U.L.	-Underwriters Laboratory

1.05 SUBMITTALS

A. Shop Drawings:
   1. Standpipe Specialties.
   2. Fire Extinguishers.
   3. Fire Department Connections.

1.06 CODES AND STANDARDS

A. Work performed under this Contract shall conform to all applicable laws, ordinances, regulations, codes (state, local and federal), and shall be subject to control of public authorities having jurisdiction.

B. Wherever requirements of such laws, codes, regulations differ from the drawings or specifications, they shall take precedence over the drawings specifications, and are expressly made part of the Contract, except where the drawings or specifications are more stringent or require better materials, which would also be acceptable to authorities (i.e., the more stringent code shall always apply).

C. Any portion of work which is not subject to the approval of an authority having jurisdiction shall be provided in accordance with National Fire Protection Association requirements.

D. Comply with applicable utility company rules and regulations.

E. Comply with Occupational Safety and Health Act (OSHA) requirements.

1.07 FEES AND PERMITS AND INSPECTIONS

A. The Contractor shall Secure all permits and pay all fees required by local and state governing bodies necessary to complete the construction. Failure to investigate all applicable payments before the bid submission shall not constitute grounds for additional monies from the Commissioner. The Commissioner shall be furnished with all certificates of approval.

1.08 INSPECTIONS, PROGRESS INSPECTIONS, SPECIAL INSPECTIONS AND TESTING

A. The following inspections, tests, progress inspections and special inspections shall be considered part of the contract work.

B. Upon completion or partial completion of the permitted fire protection work, inspections, progress inspections, special inspections and tests shall be conducted by approved agencies or special inspectors qualified to conduct such inspections and tests. Inspections and progress inspections shall be performed in compliance with section BC 109 of the New York City Building Code. Special inspections shall be performed in compliance with sections BC 1704 and BC 1707 of the New York City Building Code for all fire protection systems regulated by the New York City Fire Code, Sections FC 901, and 904. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code for additional provisions related to inspections.

C. Special inspections of fire protection systems shall be performed by the City of New York and will include the following as applicable to the system:

1. Visual certification that required components of such systems are complete in accordance with the manufacturers installation guidelines and the approved construction documents.
2. Supports, hangers, seismic bracing, and vibration isolation equipment are properly spaced and anchored to supporting structure.
3. Installation of required signage and safety instructions.
4. Electrical components are installed and electrical sign-off issued.
5. Required labeling, operational instructions and safety signage properly posted.
6. All related special inspections for such systems are complete.

D. Tests of fire protection systems shall be performed in accordance with the following New York City Building Code and New York City Fire Code Sections:

Test Item	Code/Section
General Acceptance Tests	BC 901.5
Water Supply Test	BC Q105
System Acceptance	BC Q105
Water Supply Test	FC 508.4
General Installation Acceptance Testing	FC 901.5
Fire Extinguishing Systems Installation Acceptance Testing	FC 904.1.1, 904.4

E. The following is a list of all required special inspections:

Special Inspection Item	Code/Section
Standpipe System Special Inspection	BC 1704.22
Seismic Isolation Systems	BC 1707.8
System Acceptance	BC Q105
Fire Extinguishing Systems	FC 904.4.1

F. The following is a list of all required progress inspections:

Progress Inspection Item	Code/Section
Fire-Resistive Rated Construction	BC 109.3.4

G. Upon completion of all special inspections, testing and building department sign-off, the fire protection contractor shall secure all certificates of compliance for the following service equipment and transmit same to commissioner:
   1. Fire Department siamese connections, standpipe system hose outlets and pressure reducing valves.

PART 2.00 - PRODUCTS

2.01 BASE BID MANUFACTURERS
   A. Steel Pipe
      1. U.S. Steel Company.
      2. Youngstown Steel and Tube Co.
      3. Republic Steel Corporation.
      4. Bethlehem Steel Company.
   B. Fire Standpipe Specialties
      1. Potter-Roemer
      2. Croker
   C. Pipe Couplings/Fittings
      1. Victaulic
      2. Gustin - Bacon
      3. Stockham
      4. Grinnell
      5. Ward

2.02 PIPING
   A. Schedule 40 steel pipe, ASTM A795 or A53, with threaded or flanged cast iron, or threaded iron fittings, except as noted.
      1. Grooved end ductile iron fittings and bolted clamp type ductile iron couplings with rubber sealing gaskets, for grooved end pipe 500 psi wwp; similar to Victaulic Style 75 may be used.
   B. Galvanized pipe for following:
      1. Drain and test piping subject to alternate wetting and drying.
      2. Piping inside building between siamese and check valve.

2.03 HOSE STATIONS AND ACCESSORIES

A. All equipment herein specified shall be manufactured by Potter-Roemer or approved equal, except as noted, and shall be as follows:

1. At each hose station exposed or in a hose cabinet, where indicated, provide a Fig. 4075 2- 1/2" brass angle valve complete with 2- 1/2" brass rack supporting hose nipple, a 2- 1/2" x 1- 1/2" reducer Fig. 2810 with 1- 1/2" Fig. 2915 Polyflex synthetic fire hose, 100 ft. long, and with a Fig. 2962 adjustable nozzle, a 2- 1/2" angle valve, cast brass body, complete with red enameled wheel handle, with red enameled finish caps and brass chain. Valve shall be 4065 and caps shall be 4625. Provide escutcheon plate 4722 for valve.
2. Provide 2- 1/2" Fig. 2766 or 1- 1/2" Fig. 2765 brass pressure reducer where hydrostatic pressure exceeds 100 psi at hose valve.
3. Recessed cabinet for hose station shall be Potter-Roemer or approved equal Fig. 1218 Series for 2- 1/2" valves. Recessed cabinet with 20 gauge body and 18 gauge trim having 20 gauge door of type "A" full clear glass. Cabinet shall be steel, baked white enamel inside, prime coated outside.
4. Provide signs as required by Fire Department. Potter-Roemer or approved equal Fig. 6300 Series.
5. All above specified equipment shall be provided with threads to suite Fire Department Specifications.

2.04 ROOF MANIFOLD

A. Provide Potter-Roemer or approved equal Fig. 5892 Series vertical brass roof manifold complete with (3) 2- 1/2" Fig. 4065 brass valves with Fig. 4626 brass caps and chains. For size of roof manifold see Drawings.

B. Shutoff valve: UL/FM cast-iron body and caps, indicator post, handwheel and drain valve. Stockham G-950.

2.05 SEALS, SIGNS, TAGS AND CHARTS

A. Seals: Provide brass crosslink chain, all brass padlock, 2 keys, or copper wire and approved seal, as required by all authorities having jurisdiction for each manually operated shut-off valve required to be sealed in open position.

B. Signs: Provide identification signs of standard design, fastened securely at designated location, as required by NFPA 14 and all authorities having jurisdiction.

C. Tags: Provide brass tags 2" in diameter, stamped with designating numbers and secured with 12 gauge copper wire to spindle of all control valves.

D. Chart: Provide 2 copies of approved Sprinkler System diagram and valve chart, giving designation number, function, location of each valve, and mount in painted, glazed frames and hang where directed.

2.06 TAMPER SWITCHES

A. UL Listed, FM approved.
   1. Potter Electric Signal Co. Type OSYSU-A2 or approved equal.
B. Switch shall be "SPDT" with two sets of spare contacts.
C. Wiring for tamper switches shall be provided under another Section.

2.07 FIRE DEPARTMENT CONNECTION

A. Similar to sprinkler. Label "standpipe" and paint caps red.

PART 3.00 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. Piping shall be installed to be clear of any and all conduits, lighting fixtures, ductwork and heating piping. Consult with the Contractors of the other trades to facilitate the erection of the System.
B. After cutting, all pipes shall be reamed out to full bore and before erection the inside of all pipes shall be thoroughly cleaned.
C. In erecting pipe, friction wrenches and vises shall be used exclusively and any pipe cut, dented or otherwise damaged shall be replaced by this Contractor.
D. Pipe threads shall be made with the best dies and tools available. During threading, the pipes shall be saturated with solvent to assure sharp threads free of burns and notches.
E. All screwed joints shall be made with the best quality pure lead, carefully placed on threads of pipe and not in fittings.
F. Piping and fittings shall be so erected that the entire system may be thoroughly drained.
G. See Architectural, Structural, Mechanical and Electrical Drawings for construction and interference details. Any changes that may be necessary because of physical conditions or compliance with the standards shall be made by this Contractor without additional cost.
H. Specific references in this Section or on the Drawings to any article, device, product or material, fixtures or equipment by name, make or catalog number shall be interpreted as establishing a basis of cost and standard quality. All the devices shall be of the make and type listed by the Underwriters Laboratories, Inc. No consideration will be granted for any alleged misunderstanding of the materials to be furnished or work to be done due to a lack of information on the drawings or in the Specifications.
I. After the piping installations have passed a satisfactory hydrostatic test and/or air test all iron and steel parts shall be thoroughly cleaned ready for painting.
J. All piping shall be accurately cut to measurements established by the Contractor and shall be installed without springing or forcing.
K. Drips and drains shall be installed at low pressure points and where required and shall discharge to open sight drains or to standard interior floor drains or service sinks.
L. Direct connection from any drain to any component of the sanitary drainage system shall be prohibited.

M. Furnish and set sleeves in walls and floors as required. Escutcheons shall be provided at all penetrations through finish/exposed areas.

N. All pipe openings shall be capped or plugged during construction and all piping shall be flushed out before closing system.

O. Pipe compound shall be applied to male threads only.

P. The use of bushings to reduce the size of openings of fittings is prohibited.

END OF SECTION

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SECTION 21 13 00

FIRE-SUPPRESSION SPRINKLER SYSTEMS

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents, [General Conditions, Supplementary Conditions, Division 1 - General Requirements].

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment, and services necessary to provide a[n] [Combined Standpipe and] Automatic Sprinkler System as shown on the drawings and as specified herein.

1. Complete sprinkler system including piping, fittings, valves, sprinklers, seismic bracing, alarms, pumps, air compressors, dry-pipe systems, pre-action system including smoke detectors, heat detectors, manual pull stations/releases, wiring, conduit, and accessories as indicated on the Drawings and as specified herein.
2. Hydraulic calculations.
3. All device wiring for the sprinkler pre-action system (wiring from smoke detectors and heat detectors to be run in conduit per Code requirements).
4. Obtain approval of all applicable local authorities, rating organization of Commissioner's insurance carrier. Shop drawings and calculations shall be approved by these authorities before submission to the Commissioner.
5. Testing of systems including written documentation.
6. Fire Extinguishers
7. Water services: Provided under plumbing work.
8. Painting.
9. Dedicated Fire Watch.

B. General Requirements:

1. All work shall be properly coordinated with the other trades to avoid conflicts. Refer to the architectural drawings for required ceiling elevations and space clearances and details.
2. All necessary cutting and patching in floor slabs, roof slabs, walls and ceiling for the Fire Protection work shall be performed by this contractor. Restore to match existing conditions.
3. Bidders, before submitting proposals, shall visit and carefully examine the area affected by this work to familiarize themselves with the existing conditions and the difficulties that will attend the execution of this work. Submission of a proposal will be construed as evidence that such an examination has been made, and later claims will not be recognized for extra labor, equipment, or materials, required because of difficulties encountered which would have been foreseen had such as examination been made.

4. All materials and workmanship shall be guaranteed for a period of one year from date of final acceptance of this work. Instruct the commissioner's personnel in the proper operation and serving of the system.
5. Secure all required permits and approvals and transmit same to the Commissioner. Contractor shall be responsible for all fees.

1.03 RELATED WORK

A. Common Work Results for Plumbing - Section 220500.
B. Hangers and Supports for Plumbing Piping and Equipment - Section 220529.
C. Fire Standpipe System - Section 211200.

1.04 QUALITY ASSURANCE

A. A.N.S.I. -American National Standards Institute
B. A.W.W.A. -American Water Works Association
C. F.S. -Federal Specifications
D. N.F.P.A. -National Fire Protection Association
E. F.M. -Factory Manual
F. I.R.I. -Industrial Risk Insurers
G. U.L. -Underwriters Laboratories
H. N.Y.C.M.E.A.-New York City Materials Equipment Acceptance
I. N.Y.C.B.C. -New York City Building Code
J. N.Y.C.F.C. -New York City Fire Code.

1.05 SUBMITTALS

A. Layout drawings with hydraulically remote areas indicated.
B. Pipe and Fittings.
C. Control valves, check valves.
D. Sprinkler Specialties.
E. Siamese and auto ball drips.
F. Pre-action System Components
G. Dry pipe valves.
H. Fire extinguishers.
I. Air compressors.
J. Automatic Sprinkler Booster pump with controller.
K. Jockey pump with controller.
L. Alarm actuating devices.
M. Automatic sprinklers and accessories.
N. Smoke Detector and Heat Detectors including wiring diagrams.
O. Hydraulic calculations and demand curves in accordance with NFPA-13.
P. Copy of test reports.
Q. Approval shall be obtained for all equipment and material before delivery to the job site. Delivery, storage or installation of equipment or material, which has not had prior approval, will not be permitted at the job site.
R. All submittals shall include adequate descriptive literature, catalog cuts, shop drawings and other data necessary ascertain that the proposed equipment and materials comply with specification requirements. Catalog cuts submitted for approval shall be legible and shall clearly identify equipment being submitted.

S. A minimum period of ten (10) working days, exclusive of transmittal time, will be required in the Engineer's office each time a shop drawing, product data and/or samples is submitted for review. This time period must be considered by the Contractor when scheduling his work.

T. Submittals for individual systems and equipment assemblies, which consist of more than one item or component, shall be made for the system or assembly as a whole. Partial submittals will not be considered for approval.

U. Submittals shall be marked to show specification reference including the section and paragraph numbers.

V. Submit each section separately and include the following:

1. Information, which conforms to contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required.
2. Submittals on all pumps shall be complete with performance curves marked with the design points. Additionally, submittals for any pumps that are in series or parallel with other pumps shall include compounded performance curves for analysis by the Commissioner.
3. Submittals on electrical equipment shall be complete with all power and control wiring diagrams.

W. Submit samples as directed of items called for in the specifications; samples of the materials, which the manufacturer will actually ship, shall be submitted for approval after award of contract and be properly labeled or identified.

X. Sprinklers shall be referred to on drawings, submittals and other documentation, by the sprinkler identification of Model number as specifically published in the appropriate agency listing or approval. Trade names or other abbreviated designations shall not be allowed.

Y. Grooved joint couplings and fittings shall be shown on drawings and product submittals, and be specifically identified with the applicable Victaulic style or series number.

1.06 SHOP DRAWINGS AND COMPOSITE DRAWINGS

A. Promptly prepare and submit all shop drawings required by the specifications, contract and contract drawings, and also all incidental shop drawings required for the proper performance of the work. The shop drawings shall illustrate fully the requirements of the specifications and the contract drawings, and shall accurately show quantities, kind of materials, methods of assembly and all data required for fabrication, erection and installation. The relationship to adjoining work, whether furnished under other subdivisions of this contract or by other contractors, shall be properly shown.

B. The HVAC Contractor shall be responsible for coordinating the installation work of all the Mechanical Contractors (HVAC, Plumbing and Electrical Work) by means of composite shop drawings as specified herein.

1. Indicate and provide sprinklers below ducts and other obstructions.

C. The composite shop drawings shall be constituted in the following manner: HVAC Contractor shall prepare a set of sepia transparencies drawn to the scale of 3/8" = 1'-0", indicating thereon all ductwork, major piping, plus structural and architectural background details. He shall deliver this set of sepias to the Contractor for Plumbing and Sprinkler who will draw his work to scale on the sepias. Then the HVAC Contractor shall deliver this set of sepias to the Contractor for Electrical Work who will superimpose his work on the drawings. The specified order in which the Contractors impose their work on the sepias. Then the HVAC Contractor shall deliver this set of sepias to the Contractor for Electrical Work who will superimpose his work on the drawings. The specified order in which the Contractors impose their work on the sepias is not intended to grant priority to any one Contractor in the allocation of space.

D. At the completion of this phase, hold a coordination meeting with the other Contractors to eliminate any interference among the trades that the drawings indicate and to avoid any conflicts in installing the work. If the Contractors are unable to reach agreement on a matter of interference among the mechanical trades, the matter shall be submitted to the Commissioner for his binding decision. After the set of sepias has been coordinated and all necessary changes have been made, each Mechanical Contractor shall sign the drawings, attesting to his agreement that all work is clear.

E. The Contractor is advised of the requirements of beam cuts for piping. Exercise special care in coordination of work between the Mechanical and Structural trades.

1.07 AS-BUILT DRAWINGS

A. Furnish as-built drawings on mylar to the Commissioner at completion of the job. Keep drawings current as work progresses.

B. Record all changes from installations originally indicated. Record final location of underground lines by depth from finished grade and by offset distances in feet and tenths to surface improvement such as building, curb, or edges of walks. Where work appears on two or more drawings, mark changes on all drawings. At completion, furnish the above required information to the Commissioner for approval and record. Drawings shall be certified to be "as-built" and signed by Contractor. Work shall not be accepted until such drawings have been delivered to the Commissioner.

1.08 OCCUPANCY HAZARD

A. Sprinkler systems shall be based on noted occupancy hazard, unless the requirements of any specific area make mandatory, a more restrictive system.
   1. Ordinary hazard.

1.9 HYDRAULIC CALCULATIONS

A. Submit for review four (4) sets of hydraulic calculations stamped approved by the insuring agency and authority having jurisdiction to provide a complete system of automatic sprinklers.
   1. Indicate remote areas and hydraulic reference points.
   2. Submit with demand curves.

1.10 APPROVALS

A. Authorities having jurisdiction.
B. Commissioner's insurance underwriters.

1.11 CODES AND STANDARDS

A. Work performed under this Contract shall conform to all applicable laws, ordinances, regulations, codes (state, local and federal), and shall be subject to control of public authorities having jurisdiction.
B. Wherever requirements of such laws, codes, regulations differ from the drawings or specifications, they shall take precedence over the drawings specifications, and are expressly made part of the Contract, except where the drawings or specifications are more stringent or require better materials, which would also be acceptable to authorities (i.e., the more stringent code shall always apply).
C. Any portion of work which is not subject to the approval of an authority having jurisdiction shall be provided in accordance with National Fire Protection Association requirements.
D. Comply with applicable utility company rules and regulations.
E. Comply with Occupational Safety and Health Act (OSHA) requirements.

1.12 FEES AND PERMITS AND INSPECTIONS

A. The Contractor shall secure all permits and pay all fees required by local and state governing bodies necessary to complete the construction. Failure to investigate all applicable payments before the bid submission shall not constitute grounds for additional monies from the Commissioner. The Commissioner shall be furnished with all certificates of approval.

1.13 INSPECTIONS, PROGRESS INSPECTIONS, SPECIAL INSPECTIONS AND TESTING

A. The following Inspections, Tests, Progress Inspections and Special Inspections shall be considered part of the contract work.

B. Upon completion or partial completion of the permitted fire protection work, Inspections, Progress Inspections, Special Inspections and tests shall be conducted by approved agencies or Special Inspectors qualified to conduct such Inspections and Tests. Inspections and Progress Inspections shall be performed in compliance with Section BC 109 of the New York City Building Code. Special Inspections shall be performed in compliance with Sections BC 1704 and BC 1707 of the New York City Building Code for all fire protection systems regulated by the New York City Fire Code, Sections FC 901, and 904. Refer to article 116 of Chapter 1 of Title 28 of the Administrative Code for additional provisions related to inspections.

C. Special inspections of fire protection systems shall be performed by the City of New York and will include the following as applicable to the system:

1. Visual certification that required components of such systems are complete in accordance with the manufacturers' installation guidelines and the approved construction documents.
2. Supports, hangers, seismic bracing, and vibration isolation equipment are properly spaced and anchored to supporting structure.
3. Installation of required signage and safety instructions.
4. Electrical components are installed and electrical sign-off issued.
5. Required labeling, operational instructions and safety signage properly posted.
6. All related special inspections for such systems are complete.

D. Progress inspections of fire protection systems shall include the following as applicable to the system:

1. Through-penetration fire stopping.

E. Tests of fire protection systems shall be performed in accordance with the following New York City Building Code and New York City Fire Code Sections:

Test Item	Code/Section
General Acceptance Tests	BC 901.5
Alternative Automatic Fire-Extinguishing Systems	BC 904.4
Underground Piping	BC Q102
System Acceptance	BC Q102
Water Supply Test	BC Q105
System Acceptance	BC Q105
Water Supply Test	FC 508.4
General Installation Acceptance Testing	FC 901.5
Fire Extinguishing Systems Installation Acceptance Testing	FC 904.1.1, 904.4

F. The following is a list of all required Special Inspections to be performed by City of New York:

Special Inspection Item	Code/Section
Sprinkler System Special Inspection	BC 1704.21
Standpipe System Special Inspection	BC 1704.22
Seismic Isolation Systems	BC 1707.8
Underground Piping	BC Q102
System Acceptance	BC Q102
System Acceptance	BC Q105
Fire Extinguishing Systems	FC 904.4.1

G. The following is a list of all required Progress Inspections:

Progress Inspection Item	Code/Section
Fire-Resistive Rated Construction	BC 109.3.4

H. Upon completion of all Special Inspections, Testing and Building Department sign-off, the fire protection contractor shall secure all certificates of compliance for the following service equipment and transmit same to commissioner:

1. Pre-engineered non-water fire extinguishing systems, including systems installed in connection with commercial cooking systems.
2. Fire department siamese connections, standpipe system hose outlets and pressure reducing valves.

1.14 Coordinate staging of fire sprinkler materials within occupied building areas and identify acceptable locations for the performance of work related pipe cutting/threading if required. On site welding, brazing or other open flame work activity shall be in accordance with DEP Hot Work procedures. Coordinate the control and temporary storage of materials that are flammable (example cutting oil, solvents), protection of existing construction and fire safety requirements for temporary work areas. Coordinate with DDC Project Manager for the work to be performed.

1.15 Provide a dedicated fire watch during planned shut downs of building fire protection/alarm systems in accordance with all applicable requirements of NYC FC (including but not limited to: Sections 408, 401, 404) and NFPA 101 [Ref. NFPA 101: 9.6.1.8, 9.7.6.1]. Occupied floors where new work is being performed shall be monitored continuously for fire/smoke condition. All interior corridors that are directly part of the path of egress shall remain free from obstructions. If egress path cannot be temporarily evacuated until normal fire safety operation is restored.

PART 2.00 - PRODUCTS

2.01 BASE BID MANUFACTURERS

A. Steel Pipe:
1. U.S. Steel Company.
2. Youngstown Steel and Tube Co.
3. Republic Steel Corporation.
4. Bethlehem Steel Company.

B. Grooved M.I. Fittings and Couplings for Grooved Pipe
1. Victaulic Company
2. Gustin-Bacon Manufacturing Company
3. Grinnell Corporation

C. Sprinkler Specialties:
1. Reliable Automatic Sprinkler Co.
2. Viking Corp.
3. Central Sprinkler Corp.
4. Victaulic
5. Star Sprinkler Corp.

D. Fire/Jockey Pumps:
1. Peerless Pump Co.
2. Allis Chalmers
3. Aurora Pump Co.
4. Grundfos

E. Pipe Couplings/Fittings:
1. Victaulic
2. Gustin - Bacon
3. Stockham
4. Grinnell

F. Control and Check Valves (Inside):
1. Milwaukee
2. Stockham
3. Victaulic
4. Walworth

G. Backflow Preventers: See Plumbing Section Facility Water Distribution - 221100.

2.02 PIPING

A. System piping shall be suitable for working pressures in accordance with the following table:
1. Pipe, Fitting and Valve Pressure Ratings:

Height from top of System to Fire Pump	Class of 2-½" Hose Valves	Fittings wwp in PSI	Valves (Gate and Check) wwp in PSI	Sched. Pipe
0'-115'	A	300	175	40 or 10

B. Inside Building:
1. UL listed, FM approved.
2. Schedule 40 steel pipe, ASTM A795 or A53, with standard weight threaded or flanged cast iron, or threaded malleable iron fittings, except as noted.
a. 8" and larger: Schedule 30.
3. Grooved end ASTM A536 ductile iron fittings, full-flow, short radius, similar to Victaulic FireLock™, or forged or fabricated from carbon steel pipe conforming to ASTM A53. Bolted clamp type ductile iron couplings with synthetic rubber pressure-responsive sealing gaskets for grooved end pipe 500psi wwp, similar to Victaulic Style 75 may be used.
a. Rigid Type: Housings shall be cast with offsetting, angle- pattern bolt pads to provide rigidity and support and hanging in accordance with NFPA 13.
1) 1-1/4"-4", Installation ready designed for direct "stab" installation onto grooved pipe without prior disassembly of the coupling, 300 psi, Victaulic EZ Style 009.
2) 5"-8", standard rigid joint, 300 psi, similar to Victaulic Style 005.
3) 10"-12", standard rigid joint, 400 psi, similar to Victaulic Style 07.
b. Flexible Type: Flexible type couplings shall be used in seismic areas where required by NFPA 13. Gaskets shall be suitable for intended service. Victaulic Style 75 or 77.
c. Flange Adapters: For use with grooved end pipe and fittings, flat face, for direct connection to ANSI Class 125 and Class 150 flanges, Victaulic Style 744. For direct connection to ANSI Class 300 flanges, similar to Victaulic Style 743.
d. Gaskets shall be pressure-responsive, synthetic rubber, listed for use with the housings:

Fire Protection Service	Temperature Range	Gasket Recommendation
Dry Systems/ Pre-action	Ambient	FlushSeal®, Grade EPDM, Type A
Water/Wet Systems	Ambient	Grade EPDM, Type A

4. In lieu of threaded cast or malleable iron fittings, carbon steel Pressfit® products may be used for fire protection service. Products shall be UL listed and FMG approved for fire protection service to 175 psi, precision cold drawn carbon steel, externally zinc electroplated, with synthetic rubber o-rings (grade to suit the intended service).
a. Use a Victaulic "PFT" series tool with the proper sizes jaw for pressing.
5. For 2-1/2" and larger piping Schedule 10 steel piping, ASTM A795 or A53 permitted with roll-grooved ends.

6. Expansion fittings:
   a. Similar to Metraflex "Fireloop" or approved equal.
   b. Use flexible type grooved joint mechanical couplings equal to Victaulic Style 75 on expansion loops in accordance with the latest Victaulic recommendations for expansion compensation.

C. Galvanized pipe for following:
1. All dry sprinkler piping.
2. Drain and test piping subject to alternate wetting and drying.
3. Piping inside building between Siamese and check valve.

2.03 CONTROL VALVES

A. UL listed and FM approved.

B. 2" and smaller:
1. Ball type, bronze body, threaded or grooved ends, 175 psi wwp, solid wedge disc, slow close with position indicator, supervised one circuit tamper switch, similar to Milwaukee Valve Co. BB-SCS02 or BB-VSCS02 series "Butterball".
2. Ball type, bronze alloy body, grooved or threaded ends, 350 psi wwp, chrome plated brass ball, stainless steel stem, brass die cast gear box with supervisory switches, similar to Victaulic Series 728 FireLock® Ball Valve.

C. 2-1/2" and larger:
1. Flanged, IBBM, OS&Y gate type, 175 psi wwp.
   a. Similar to Milwaukee No. 2885-FP.
   b. Provide with UL listed 120 volt, closed circuit, supervisory tamper switch.
2. Grooved, butterfly valve, 300 psi wwp, synthetic rubber coated ductile iron disc.
   a. Similar to Victaulic Series 705W.
   b. Provide with supervisory switches and weatherproof actuator.

D. 4" and larger.
1. UL listed, FM approved, butterfly type, 175 psi wwp, iron body, supervised two circuit tamper switch, similar to Victaulic Series 708W.

E. OS&Y.
1. UL listed, flanged IBBM, OS&Y gate type, 175 psi wwp; similar to Stockham No.G-634.
2. UL listed, FM approved, flanged IBBM, OS&Y gate type, 250 psi wwp; similar to Nibco Valve Co. No. F-607-RW. Where required for 250 psig service.

2.04 FLOOR CONTROL VALVE ASSEMBLY

A. UL/FMG, floor control valve assembly consists of the following:

1. Control/Indicating Valve: O.S.&Y-Type, 300 psi wwp, ductile iron body with grooved ends, integral weatherproof gear operator, and integral indicating device, provided with supervisory tamper switches. Similar to Victaulic Series 705W.
2. Inspector's Test Valve Assembly: Grooved or threaded, globe type, with bronze body and bonnet, bronze and copper alloy internals with stainless steel spring, dual polycarbonate sight glasses, integral orifice, and malleable iron handwheel. Similar to Victaulic Style 720 TestMaster II.
3. Waterflow Device: Similar to system Sensor Model WFD, vane type waterflow detector or approved equal.
4. Pressure Gauge.
5. Provide metal signs, similar to Reliable, indicating area served and hydraulic data.

2.05 DRAIN AND TEST VALVES

A. Two-piece threaded bronze ball type with chrome-plated brass ball, quarter-turn handle, Stockham No. S-214-TT.

B. Grooved or threaded globe type with bronze body and bonnet, bronze and copper alloy internals with stainless steel spring, dual polycarbonate sight glasses, integral orifice, and malleable iron handwheel. Victaulic Style 720 TestMaster II.

C. Provide at all low points for system drainage and testing.

2.06 PRESSURE REDUCING VALVES

A. 1 1/2" to 10":

1. UL listed, 175 psi rated, ductile iron body, bronze trim, stainless steel spring of required tension.
2. Flanged or threaded body, globe or angle pattern, pilot operated, Buna-N diaphragm and disc.
3. Internal/external epoxy coated, open/closing speed controls and inlet strainer.
4. Similar to Cla-Val Model 90G-21KCXHI, 300G, DB, CRDKXHI or approved equal.
5. Provide with pressure relief valve set at maximum of 175 psi and pipe to drain riser.

2.07 CHECK VALVES

A. Swing type, except as noted:

1. 2" and smaller: Threaded bronze, 175 psi wwp; Similar to Milwaukee No. 509S or approved equal.
2. 2-1/2" and larger: UL/FMG, grooved ends, single-disc design, spring-assisted, ductile iron body with aluminum bronze or elastomer encapsulated ductile iron disc, stainless steel spring and shaft, synthetic rubber or welded-in nickel seat; 250 psi wwp: Victaulic Series 717/717R.
   a. 4" and larger sizes available with riser check kit.
   b. Riser check valves shall be permitted in wet systems that have a constant water pressure. Provide water flow devices equal to System Sensor WFD Series and electric alarm valve.

B. Pump Discharge: Silent, IBBM, double center guided conical spring type.
Note: for 250 PSI service indicate class 250.
1. 4" and larger: Similar to Class 125 Clow Silent Check Valve No. 636 or approved equal.

C. Air Lines: Threaded bronze, swing type, 175 psi wwp with composition or leather disc, similar to Stockham No. B-320B or approved equal.

2.08 SIAMESE

A. Flush type as noted, finish as specified by commissioner, lettered "Sprinkler" as required. Provide 3/4" bronze automatic ball drip. Paint plugs green Freestanding: Croker 5423. Flush type: Similar to Croker 6030 or 6031, 6040 or 6041 or approved equal.

B. Inlet size 6" x 3" x 3". Hoses and threads as required by [NYC] Fire Department.

C. Install ball drip between siamese and check valve, at lower point. Drain ball drip to floor drain.

D. Sign: Chrome plated brass, mounted on wall at siamese, 2" high lettering etched and painted. Similar to Croker 6778 or approved equal.

E. Independent swivel inlets, each with clapper valve.

F. Cast iron plug painted green with brass chain.

G. Provide metal plates of approved design on building wall, indicating area of building sprinklered.
1. Plate: Bronze.

2.09 AUTO BALL DRIPS

A. 3/4" bronze with both ends threaded; similar to Croker 6780 series or approved equal.

2.10 FIRE HOSE EQUIPMENT: See Section Fire Standpipe System - 211200.

2.11 AUTOMATIC SPRINKLERS

A. Underwriters' listed, cast brass, body with hex shaped wrench boss, closed fusible link or frangible bulb, wet type with ½ inch discharge orifice. "K" factor shall be 5.3 to 5.8 unless otherwise specified or required. Reliable Automatic Sprinkler Co., Inc., Victaulic Company, or approved equal.
1. General Hung Ceiling Area: Standard recessed type, chrome plated.
a. Similar to Reliable model G with matching escutcheon or approved equal.
b. Similar to Victaulic model V2707 or V2708 with matching escutcheon or approved equal.
2. Hung Ceiling Areas, where selected by Commissioner, fully recessed, concealed type "dull white" painted over.
a. Similar to Reliable model G-1 Concealer or approved equal.
b. Similar to Victaulic model V3801 or V3802 or approved equal.

3. Finished areas without hung ceilings: Standard upright or pendent type chrome plated.
   a. Similar to Reliable model G or approved equal.
   b. Similar to Victaulic model V2703, V2704, V2707, or V2708 or approved equal.
4. Unfinished areas (Mechanical Equipment rooms): Standard upright or pendent type, rough brass.
   a. Similar to Reliable model G or approved equal.
   b. Similar to Victaulic model V2703, V2704, V2707, or V2708 or approved equal.
5. Sidewall upright or pendent, dry type head where indicated.
   a. Similar to Reliable model G3, G3A or approved equal.
   b. Similar to Victaulic model V3609, V3610, V3605, or V3606 or approved equal.
6. Sidewall - Chrome plated where indicated.
   a. Similar to Reliable model G-HSW1 approved equal.
   b. Similar to Victaulic model V2709 or V2710 or approved equal.

B. Sprinkler heads shall be Underwriters' Approved cast brass closed fusible link or frangible glass bulb type.

C. See equipment schedule on drawing **SP-001.00**.

2.12 SPRINKLER CABINET

A. Enameled steel with approved number of sprinklers of all type and rating installed, two sprinkler wrenches. Install where directed by the Commissioner. Quantity of sprinklers shall be in accordance with NFPA Standards.

2.13 SEALS, SIGNS, TAGS AND CHARTS

A. Seals: Provide brass cross link chain, all brass padlock, two keys, or copper wire and approved seal, as required by all authorities having jurisdiction for each manually operated shut-off valve required to be sealed in open position.

B. Signs: Provide identification signs of standard design, fastened securely at designated locations, as required by NFPA 13, 14 and all authorities having jurisdiction.

C. Tags: Provide brass tags 2" in diameter, stamped with designating numbers and secured with 12 gauge copper wire to spindle of all control valves.

D. Chart: Provide 2 copies of approved Sprinkler System diagram and valve chart, giving designation number, function, and location of each valve. Mount in painted, glazed frames and hang where directed.

2.14 SYSTEM TEST PIPES

A. Provide 1" inspectors test pipes fitted with a 1" shutoff valve for each valved sprinkler zone.
   1. For open drains: 1" blind test connection, Reliable Model A.
   2. Sight glass with 1/2" minimum orifice for closed drain systems.
      a. Orifice: Sized for minimum flow rate of one sprinkler in respective sprinkler zone.

B. Pipe to floor drains or service sink. Floor drains and service sinks shall be provided under another Section.

C. See details on drawings.

D. In lieu of test pipe assembly, similar to Victaulic Style 720 TestMaster™ II alarm test module, or approved equal, may be used for each valved sprinkler zone.

2.15 TAMPER SWITCHES

A. UL listed, FMg approved:
   1. Similar to Potter Electric Signal Co., Model OSYB or OSY-SUA, or approved equal.
   2. Similar to System Sensor Model OSY2 or PIBV2, or approved equal.

B. Switch shall be "SPDT" with two sets of spare contacts.

C. Wiring: Provided under another Section.

D. Provide on all control valves.

2.16 WATERFLOW SWITCHES

A. UL listed, FM approved, similar to Reliable Automatic Sprinkler Company Model "A" or System Sensor WFD, or approved equal, paddle type with adjustable pneumatic retard device to prevent false alarms due to water surges.

B. Switch shall be "SPDT" with two sets of spare contacts.

C. Wiring: Provided under another Section.

2.17 DRY PIPE VALVE

A. Flanged IBBM or grooved end units for vertical mounting. 125 psi flanged ends conforming to ANSI B16.1; grooved ends conforming to ANSI/AWWA C606 and ANSI B16.5. Clapper shall be rubber faced. Similar to Victaulic FireLock® NXT Series 768, or approved equal.

B. 175 psi wwp and factory tested to 350 psi. UL listed and FMG approved and shall be so stamped.

C. Provide mechanical alarm, similar to Victaulic Series 760, and electrical alarm, low and high air alarm switch, System Sensor EPS-40, and pressure switch, System Sensor EPS-10, or approved equal.

D. Valve shall be furnished complete with (accelerator, Victaulic Series 746-LPA), priming chamber attachment, pressure gauges, test valves, drain valves, external piping, air maintenance device with pressure switch (Victaulic Series 757P) and all other necessary appurtenances.

E. Valve shall be externally resettable. Internal parts shall be replaceable without removing valve from installed position. Required air pressure is 13 psi minimum, water working pressure is 300 psi maximum with grooved ends for vertical installation.

F. Provide with air compressor or inert gas (nitrogen) system.

2.18 PRE-ACTION SPRINKLER SYSTEM

A. Completely pre-assembled pre-action fire protection valve, UL Listed and FM Approved conforming to NFPA 13 requirements. Hydraulically calculated automatic pre-action sprinkler system complete with all equipment, piping, and accessories and associated work in accordance with the code, all authorities having jurisdiction, and this specification.
   1. Similar to Reliable Supertrol Single Interlock Preaction System or approved equal.

B. The work shall be governed and shall comply with these specifications, unless indicated otherwise. The work shall include all services to complete the system and provide the Commissioner with a fully operational system. This includes the wiring of all devices including smoke and heat detectors.

C. All work to be properly coordinated with the other trades to avoid conflicts. Refer to the architectural drawings for required ceiling elevations and space clearances and details.

D. Visit and carefully examine the area affected by this work to familiarize with the existing conditions and the difficulties that will attend the execution of his work.

E. Submit sepia and two prints of the pre-action sprinkler system shop drawings certified by all trades that coordination and the difficulties that will attend the execution of this work. Wiring diagrams shall be included within the shop drawing submittals.

F. Secure all required permits and approvals and transmit same to the Commissioner. Be responsible for all fees.

G. Coordinate and maintain access in general construction, which will be required for the proper operation and maintenance of all equipment, valves, and other similar devices.

H. Remove or modify existing equipment, piping, or systems as required by the drawings or specifications and as may be required when such work is uncovered and found to interfere with the completion of the work in this Contract or other contract work. Remove existing construction as required for installation of new work and restore to original condition.

I. This contractor shall be responsible for installation of all components of the pre-action system including the smoke detectors, heat detectors, manual pull stations, and all associated wiring.

J. Pre-Action System Equipment:

1. UL listed, electrically operated system with, differential type pre-action valve, angle pattern threaded or grooved ends. Reliable model A. 2- 1/2" size (Reliable model BX sizes 4"-6"), provide with manual release station at valve.

2. System including:

a. Deluge Valve: Low differential, latched clapper design, black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft, peroxide cured EPDM diaphragm, EPDM seal, brass seat, and Nitrile seat O-rings. Valve internal parts shall be replaceable without removing the valve from the installed position. Valve shall be externally resettable. Minimum required air pressure is 13 psi and 300 psi maximum water working pressure. Pre-action valve does not require a separate check valve downstream. Valve shall be supplied in a enameled cabinet. Include trim sets for bypass, drain, electrical sprinkler alarm switch; low air pressure supervisory switch; pressure gauges, drip cup assembly piped without valves and separate from main drain line, fill line attachment with strainer, and push-rod chamber supply connection.

1. Water supply shutoff valve.
2. Alarm line pressure switch Similar to System Sensor Model EPS10-2, or approved equal and air supervisory pressure switch System Sensor Model EPS45-2, supervisory compressor switch, and pressure gauges. All shall be pre-wired. All external electrical connections shall be accessible through an enclosure on the outside of the cabinet.
3. Supervisory panel, System Sensor PDRP 1001.

b. Air compressor panel with low air switch wired to a local alarm bell. Similar to Reliable Model "B" or approved equal.

c. Drains, gauges, test apparatus, pressure switch (wired to supervisory panel) and required accessories including:
   1. Supervisory and alarm bells, trouble horn and wall signage at all room exits.

d. Air compressor, similar to Reliable Model A or Gast, or approved equal 1/3 HP, 115V, single phase. Provide with air pressure maintenance switch preset to 13 psi cut-in and 18 psi cut-out.
   1. Inert gas (Nitrogen) system may be used in lieu of air compressor.

e. Provide (2) manual pull stations for each preaction assembly. One manual release at the valve and a manual pull station within the space adjacent to the valve. Provide all wiring.

f. For systems that require an accelerator, provide Dry Accelerator: Bronze body, stainless steel spring, restrictor, and bolts, with EPDM diaphragm, seal, and O-ring, for use with system air pressures ranging from 13 psi (90kPa) to 18 psi (124 kPa). Provide with tank as required.

3. System actuated by ionization type smoke detectors provided under this work. Pre-action valve is armed up to check valve on smoke detector zone. Systems discharge when sprinklers open only. Smoke detectors shall be dual chamber ionization type Reliable Model NK-24 or System Sensor, power supervision to be end of line module.
4. The valve is completely mounted within a 12 gauge steel cabinet. Cabinet shall be coated with red ASA-61 electrostatically applied polyester powder coating.
5. Water inlet, system supply, and drain connections shall be grooved for ease of installation.

K. Sequence of Operation:
1. When any detector actuates, the release control unit will open and actuate electric fire alarm. The preaction valve will not trip until a sprinkler fuses. Upon fusing, the air pressure in the system will release and allow the bypass valve to activate and cause the deluge valve to open. The sprinkler system will then release. Alarm will be given by an electric bell and pressure switch.

2. If the sprinkler system piping or a sprinkler is damaged the loss in air pressure will open bypass valve and give a low air pressure alarm. No water will enter the system since the release control unit has not opened.
3. Opening the emergency release will open the pre-action valve and allow water to enter the system.
4. In the event of a primary power failure, the system automatically switches to battery power.

L. Shop Drawings and Hydraulic Calculations:
1. Submit, for review, four (4) sets of shop drawings and hydraulic calculations stamped approved by the insuring agency and Fire Department to provide a complete system of automatic sprinklers.

M. Submit in quadruplicate, for approval, descriptive literature of all equipment to be furnished under this Contract, before ordering.

N. Shop drawings and hydraulic calculations shall be prepared in accordance with NFPA pamphlets.

O. Provide contact from pre-action alarm panel to base building alarm initiation panel.

2.19 MECHANICAL SPRINKLER ALARM

A. Furnish mechanical sprinkler alarms where indicated on the drawings.

B. UL listed, FM approved; 10" diameter gong with 3/4" inlet, 1" drain. Cast aluminum painted red and marked.
1. Reliable model C.

C. Similar to Victaulic Series 760 or approved equal.

2.20 AUTOMATIC SPRINKLER BOOSTER PUMP ASSEMBLY

A. 1000 gpm, 86 psi (199) feet head, 3600 RPM, 60 HP, 208 Volt, 3 phase, Similar to Peerless Pump: 5AEF8 or approved equal.

B. Underwriter's listed and Factory Mutual approved.

C. Pump:
1. Centrifugal type.
2. Cast iron, single stage casing with renewable bronze case wearing rings, double suction enclosed bronze impeller and renewable bronze impeller wearing rings.
3. Extra heavy steel shaft with renewable bronze or stainless steel shaft sleeves.
4. Deep stuffing boxes with bronze glands and external water seal.
5. Heavy duty grease lubricated ball bearings.
6. Grease fittings and drain plugs.

D. Motor:
1. Squirrel cage induction type.
2. Grease lubricated ball bearings.
3. Horizontally mounted.
4. Drip-proof.

E. Mountings:
1. Connected with flexible coupling.
2. Aligned, bolted and doweled in place on heavy extended box type fabricated steel bed plate with drainage lip, by pump manufacturer.
3. Spill gland leakage and bed plate drains over floor drain.

F. Provide required Underwriter's and FM accessories, including:
   1. Suction and discharge pressure gauges.
   2. Circulation relief valve.
   3. Automatic air release valve.
   4. Main relief valve.
   5. Hose valve header and hose valves.

G. Motor Controller: UL listed, factory assembled, enclosed type with required accessories, including current failure and pump operation alarm contacts.
   1. Similar to Firetrol No. FTA-1000, or approved equal, automatic start, manual stop, across-the-line.
   2. With interrupting capacity of 200,000 amps.
   3. Terminals to match feeder size as indicated on Electrical plans.

H. Provide a complete assembly with all components consisting of pump, motor, controller, piping, valves, accessories, and interconnecting wiring.
   1. UL listed
   2. Factory Mutual approved.

I. Capacity: As scheduled on the Drawings. The pump shall deliver not less than 150% of rated capacity at a pressure not less than 65% of rated head. The shutoff pressure should not exceed 120% of the rated pressure.

J. Pump:
   1. Single - Stage
   2. Single Suction
   3. Horizontally split case

K. Warranty: One year from start-up.

2.21 JOCKEY PUMP

A. The jockey pump shall be a vertical single stage type pump, as scheduled on the drawings, coupled to a motor, rated for 208 volts, 3 phase, 60 cycle. (Pump shall have cast iron diffusers; and adapter with registered fits to maintain axial alignments; bronze enclosed impellers, bronze casing ring, bronze base bearings and sand cap; steel shaft coupling; stainless steel shaft. Impellers shall be pinned to shaft to prevent reverse rotation and to obtain interstage lateral setting.) Pump shall be provided with cast iron base with drain plug.

B. The jockey pump control panel shall include an across-the-line magnetic starter, disconnect switch, H-O-A switch, pressure switch and running period timer.

C. The pump shall be hydrostatically tested to twice the working pressure, but in no case to less than 250 psig. Prior to shipment, the pump and motor shall be thoroughly shop tested by the manufacturer. A characteristic curve of pump performance from the test results shall be drawn and furnished to the Consulting Engineer or Commissioner's Representative.

D. The pump manufacturer shall provide the service of manufacturer's representative for the fire pump installation start-up and test run supervision.

E. 10 gpm, 277 ft. head, 1 HP, 208 volt, 3 phase, Grundfos CR2-150U.

F. Vertically mounted, mult-stage type.

G. Motor Controller: UL listed, with running period timer, pressure switch, overload relays and fusible disconnect. Similar to Firetol model FTA-500 or approved equal.
H. Warranty: One year from start-up.

2.22 FIRE PUMP TESTING EQUIPMENT
A. 2-1/2" cotton rubber line hose, six 50' lengths.
B. Nozzles: 2-1/2" x 15" x 1-1/8" open tapered red enameled galvanized cast iron. Croker 3489.
C. Hose Saddle Racks: wall hung steel red enameled finish, attached to wall with backing plate, Croker 135. Provide two.
D. Spanner Wrench: Croker 2205.
E. Washers: Provide 12.

2.23 FIRE EXTINGUISHERS
A. Ten (10) pound size, dry chemical type, U.L. rating 4A:60B:C.
B. Red polyester coated steel cylinder with pressure gauge and hose with nozzle.
C. Similar to Croker 4010 or approved equal.
D. Fully recessed cabinet where required. 20 gauge box and door, 18 gauge frame, prime finish, glass panel front.
1. Croker 2616.
E. Mechanical/Electrical/Machine Shop rooms: 15 pounds CO2 type similar to Croker 4415 or approved equal.
F. Install as required by code or as noted on Commissioner drawings.

2.24 HEAT TRACING

A. Provide 120V, UL listed heat tracing as noted on drawing SP-110.00 for piping in unheated spaces.

PART 3.00 - EXECUTION

3.01 INSTALLATION REQUIREMENTS
A. Temporary shutdown of existing services:
1. Install new work and connect to existing work with minimum interference to existing facilities.
2. Temporary shutdown of existing services:
a. At no additional charges.
b. At times not to interfere with normal operation of existing facilities.
c. Only with written consent of commissioner.
3. Maintain continuous operation of existing facilities as required with necessary temporary connections between new and existing work.
4. Certain portions of the work may be performed after regular working hours. Cost of all overtime is to be included in contractor's proposal.
B. Piping shall be installed to be clear of any and all conduits, lighting fixtures, ductwork and heating piping. Consult with the Contractors of the other trades to facilitate the erection of the System.
C. After cutting, all pipes shall be reamed out to full bore and before erection the inside of all pipes shall be thoroughly cleaned.

D. In erecting pipe, friction wrenches and vises shall be used exclusively and any pipe cut, dented or otherwise damaged shall be replaced by this Contractor.

E. Pipe threads shall be made with the best dies and tools available. During threading, the pipes shall be saturated with solvent to assure sharp threads free of burns and notches.

F. All screwed joints shall be made with the best quality pure red lead, carefully placed on threads of pipe and not in fittings.

G. Grooved joint piping systems shall be installed in accordance with the manufacturer's (Victaulic) guidelines and recommendations. All grooved couplings, fittings, valves and specialties shall be the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.

H. Grooved coupling manufacturer's factory trained field representative shall provide on-site training for contractor's field personnel in the proper use of grooving tools, application of groove and installation of grooved piping products. Factory trained representative shall periodically review the product installation. Contractor shall remove and replace any improperly installed products.

I. Pipe for the Pressfit® system shall be square cut, +/- 0.030", properly deburred and cleaned. Pipe ends shall be marked at the required location to ensure full insertion into the coupling or fitting during assembly. Use a Victaulic 'PFT" series tool with the proper sized jaw for pressing.

J. Any and all sprinkler heads placed in location where they are liable to be accidentally hit in the normal course of events shall be provided with heavy wire guards.

K. Sprinklers in general shall have ordinary degree temperature rating, but any and all heads subject to abnormal heating conditions, as those in vicinity of heating units, boilers, or very close to hot piping, shall be of sufficiently high temperature rating to prevent their accidental discharge when no fire is present.

L. Sprinklers: Installed on a true axis line in both directions with a tolerance of 1/2" ±. At the completion of the installation, if any heads are found to exceed the above-mentioned, and any adjoining work that may be disturbed in reinstating said heads shall be repaired or reinstated at no additional cost to the Commissioner.

M. The sprinkler bulb protector must remain in place until the sprinkler is completely installed and before the system is placed in service. Failure to follow this instruction could cause damage to the glass bulb, resulting in improper sprinkler operation, serious personal injury and property damage. Remove bulb protectors carefully by hand after installation. Do not use any tools to remove bulb protectors.

N. Do not install sprinklers that have been dropped, damaged, or show a visible loss of fluid. Never install sprinklers with cracked bulbs.

O. Piping and fittings shall be so erected that the entire system may be thoroughly drained. On dry-pipe systems branch lines shall be pitched 1/2" in 10'; cross and feed mains shall be pitched 1/4" in 10' minimum.

P. See Architectural, Structural, Mechanical and Electrical Drawings for construction and interference details. Any changes that may be necessary because of physical conditions or compliance with the standards shall be made by this Contractor without additional cost.

Q. Specific references in this Section or on the drawings to any article, device, product or material, fixtures or equipment by name, make, or catalog number shall be interpreted as establishing a basis of cost and a standard quality. All the devices shall be of the make and type listed by the Underwriters Laboratories, Inc. No consideration will be granted for any alleged misunderstanding of the materials to be furnished or work to be done due to a lack of information on the drawings or in the Specifications.

R. Make notifications in respect to location of sprinkler heads, as may be required by field conditions or as may be found necessary by the Commissioner at the time of installation, valves, fittings, hangers means of draining systems, alarm and connections thereto and all necessary appurtenances shall be installed as required. Any changes that may be necessary because of physical conditions or compliance with the standards and requirements of any agency having jurisdiction shall be made by this Contractor without additional cost to the Commissioner.

S. The riser branch assemblies and trimmings shall be installed inside of the building at the locations directed. Approved devices shall be installed for the automatic annunciation of the flow of water. Each wet pipe assembly and its appurtenances shall be so arranged and equipped in an approved manner that the transmission of accidental water flow alarms (due to surges or related conditions) will positively be prevented.

T. The system shall be so installed that no part thereof will interfere with doors, windows, heating, plumbing or electrical equipment, and sprinkler heads shall not be located closer than one foot from lighting fixtures or other obstructions and two feet from partitions. Coordinate work with the other trades as to avoid any interference with effectiveness of the Automatic Sprinkler System and incorporate in composite Working Drawings, location of sprinkler heads in relation to other ceiling located equipment, elevations and inverts of piping, ductwork equipment, and electrical appurtenances of other Sections in conflict.

U. Provide all required drains. Inspector's test valve to be installed, supplied from the highest and most remote part of each system in relation to the riser or main branch assembly, and be conveniently accessible. Test pipes to be valved and pipe to discharge through proper orifice to floor drains or sinks and/or as indicated on the Drawings.

V. After the piping installations have passed a satisfactory hydrostatic test and/or air test all iron and steel parts shall be thoroughly cleaned ready for painting.

W. All piping shall be accurately cut to measurements established by the Contractor and shall be installed without springing or forcing.

X. Drips and drains shall be installed at low pressure points and where required and shall discharge to open sight drains or to standard interior floor drains or service sinks.

Y. Direct connection from any drain to any component of the sanitary drainage system shall be prohibited.

Z. Furnish and set sleeves in walls and floors as required. Escutcheons shall be provided at all penetrations through finish/exposed areas.

AA. Provide all valves 6" and larger with a rating of over 150 lbs. with a 1" bypass valve of same pressure rating as the bypassed valve.

BB. All pipe openings shall be capped or plugged during construction and all piping shall be flushed out before closing system.

CC. Pipe compound shall be applied to male threads only.

DD. Sprinkler heads installed in fittings before piping is erected shall be prohibited.

EE. A drain connection shall be provided near the base of each riser and at lowest point of each horizontal main.

FF. The use of bushings to reduce the size of openings of fittings is prohibited.

GG. Before ordering any material or doing any Work, verify all measurements, ceiling heights and conditions at the Site and be responsible for the correctness of same. Extra charges or compensation will not be allowed on account of differences between actual measurements and the dimensions shown on the Drawings, but any such differences which may be found shall be submitted to the Commissioner for adjustment, before proceeding with the work.

HH. Provide flushing connections for flushing scale and foreign material from sprinkler system in accordance with NFPA.

II. Installation: Made by an approved contractor, specializing in sprinkler and fire protection work, having not less than ten years experience in installing systems of comparable size.

JJ. See Architectural, Structural, Mechanical and Electrical Drawings for construction details of the new and alteration work. Any changes that may be necessary because of physical conditions or compliances with the standards shall be made by the Sprinkler Contractor without additional cost to the Commissioner.

KK. Provide chain-operated sheaves and chains were indicated on drawings and for all valves 6" and larger which are more than 6' above the floor.

3.02 TESTING

A. Before any paint is applied, the system shall be tested hydrostatically at not less than 200 psi pressure for two (2) hours minimum, and in accordance with all requirements of the authorities having jurisdiction and NFPA latest edition.

END OF SECTION

SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this Section, as shown or7 specified, shall be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment, hoisting and rigging, scaffolding and services necessary to complete the Plumbing Work as shown on the drawings and specified herein, including, but not limited to, the following:

1. Excavation and backfill.
2. Temporary toilet facilities and water for construction.
3. Domestic water and sprinkler services.
4. Sanitary drainage and vent systems.
5. Domestic water systems.
6. Fuel gas systems.
7. Insulation.
8. Plumbing fixtures.
9. Valved water for HVAC equipment.
10. Connection to Existing Piping.
11. Electrical equipment as noted.
12. Removals.
13. Shop drawings and samples.
14. Testing of systems.
15. Record and as-built drawings.
16. Commissioning support.

1.03 WORK NOT INCLUDED

A. Temporary:
   1. Water supply for construction.
   2. Toilet facilities for construction.
   3. Fire protection during construction.

B. Finished painting.

C. Toilet accessories except installation as required by authorities having jurisdiction.

D. Electrical wiring except as noted.

E. Installing cover frames for sewage and sump pits.

F. Drainage piping extended from HVAC equipment.

G. Access doors.

1.04 FEES AND PERMITS AND INSPECTIONS

A. The Contractor shall secure all permits and pay all fees required by local and state governing bodies necessary to complete the construction. Failure to investigate all applicable payments before the bid submission shall not constitute grounds for additional monies from the Commissioner. The Commissioner shall be furnished with all certificates of approval.

1.05 INSPECTIONS, PROGRESS INSPECTIONS, SPECIAL INSPECTIONS AND TESTING

A. The following inspections, tests, progress inspections and special inspections shall be considered part of the contract work.

B. Upon completion or partial completion of the permitted plumbing work, inspections, progress inspections, special inspections and tests shall be conducted by approved agencies or special inspectors qualified to conduct such inspections and tests. Inspections and progress inspections shall be performed in compliance with section BC 109 of the New York City Building Code. Special inspections shall be performed in compliance with sections BC 1704 and BC 1707 of the New York City Building Code for all plumbing systems regulated by the New York City Plumbing Code, sections PC 107, PC 312, Chapters 6, 7, 9 and 11, the New York City Fuel Gas Code, Sections FGC 107, and FGC 406. Refer to article 116 of Chapter 1 of Title 28 of the Administrative Code for additional provisions related to inspections.

C. Special inspections of plumbing systems shall be performed by the City of New York and will include the following as applicable to the system:

1. Visual certification that required components of such systems are complete in accordance with the manufacturer's installation guidelines and the approved construction documents.
2. Supports, hangers, seismic bracing, and vibration isolation equipment are properly spaced and anchored to supporting structure.
3. Installation of required signage and safety instructions.
4. Electrical components are installed and electrical sign-off issued.
5. Required labeling, operational instructions and safety signage properly posted.
6. All related special inspections for such systems are complete.

D. Tests of plumbing systems shall be performed in accordance with the following New York City Building Code and New York City Plumbing Code Sections:

TEST ITEM	CODE/SECTION
Drainage & Vent Water Test	PC 312.2
Drainage & Vent Air Test	PC 312.3
Drainage & Vent Final Test	PC 312.4
Water Supply System Test	PC 312.5
Water Service Pipe	PC 312.5.1
Gravity Sewer Test	PC 312.6
Backflow Prevention Assemblies	PC 312.9
Regulators and Valve Assemblies	FGC 406.1.5
Expansion Joints	FGC 406.3.1
Gas Distribution Piping	FGC 406.4
Gas Leakage Test	FGC406.6

E. The following is a list of all required special inspections to be performed by the City of New York:

SPECIAL INSPECTION ITEM	CODE/SECTION
Backflow Prevention Assemblies	PC 312.9
Prefabricated Construction Assemblies	FGC 107.1.2

F. The following is a list of all required progress inspections:

PROGRESS INSPECTION ITEM	CODE/SECTION
Underground Inspection	PC 107.1.1.1
Rough-in Inspection	PC 107.1.1.2
Gas Rough-in Inspection	FGC 107.1.2

G. Upon completion of all special inspections, testing and building department sign-off, the plumbing contractor shall secure all certificates of compliance for the following service equipment and transmit same to commissioner:
   1. Fuel-gas-burning equipment.
   2. Heating systems.

1.06 REFERENCE DOCUMENTS AND STANDARDS

A. Accepted plumbing standards and organization whose abbreviations are used to identify such standards are listen below:
   1. A.G.A., American Gas Association.
   2. A.S.M.E., American Society of Mechanical Engineers.
   3. A.N.S.I., American National Standards Institute, Inc.
   4. A.S.S.E., American Society of Sanitary Engineering.
   5. A.S.T.M., American Society for Testing and Materials.
   6. A.W.W.A., American Water Works Association.
   7. C.I.S.P.I., Cast Iron Soil Pipe Institute.
   8. C.S., Commercial Standard - National Bureau of Standards.
   9. F.S., Federal Specifications.
   10. N.S.F., National Sanitation Foundation Testing Laboratory, Inc.
   11. P.D.I., Plumbing and Drainage Institute.
   12. N.F.P.A., National Fire Protection Association.

13. U.L., Underwriters Laboratories.
14. F.M., Factory Mutual

1.07 GUARANTEE

A. In addition to the requirements stated in the specifications, guarantee all equipment, materials and appurtenances installed to be free from all defects. Upon written notice from the Commissioner, promptly correct all defects without additional cost to the Commissioner. Make good, at no extra cost any defects in materials or workmanship that may appear. The guarantee period shall be from one (1) year after final inspection and acceptance of the project.

PART 2.00 - PRODUCTS

2.01 QUALITY OF MATERIALS AND SUBSTITUTIONS

A. Where a specific model and manufacturer of equipment is specified, provide what is specified without substitution. Where specified as "or approved equal", the Contractor may substitute equipment except that the burden is upon the Bidder to prove such quality. If the bidder elects to prove such equality he must request the Commissioner's and Commissioner's approval in writing to substitute such item for the specified item, starting the cost difference involved with supporting data, and samples, to permit a fair evaluation of the proposed substitution with respect to quality, serviceability, warranty and cost. A submittal for a proposed substitution must include comparative data of all performance criteria contained in the specifications, schedules and drawings and delineate all differences between the proposed substitution and the specified equipment in terms of space requirements, access requirements, supports, piping and ductwork connections, power wiring, controls and all other changes required to be made in other work including cost adjustment to accommodate the substituted equipment. The Commissioner reserves the right to reject a substitute based upon its compatibility with systems and special layouts or for any performance or construction criteria whether or not that criteria was outlined in the specifications and drawings.

B. Substituted equipment, where permitted, must conform to space requirements including required access space. Any substituted equipment that cannot meet space requirement shall be replaced at the Contractor's expense. A specific model and manufacturer of equipment may be used as a standard for producing the drawings. Where the Contractor elects to use equipment specified other than that used as a drawing standard or where the Contractor elects to use substitutes if approved, equipment other than that specified, any modifications of related systems or other trades (Electrical, HVAC, Structural, Architectural) or additional cost that results from this equipment shall be borne by this Contractor.

2.02 PRODUCT HANDLING

A. In addition to the requirements of the General Conditions, the Contractor shall be responsible for the following:
   1. Responsibility for care and protection of plumbing work rests with the Contractor until it has been tested and accepted.
   2. After delivery, before, during and after installation, protect equipment and materials against theft, injury and damage for all causes.
   3. Coat polished or plated metal part with Petrolium jelly immediately after installation.
   4. Protect equipment outlets and pipe, openings with caps.

B. Receive, properly house, handle, hoist, deliver to proper location, equipment and other material required for the contract.

2.03 MATERIALS

A. Design:
   1. Unless otherwise specified, equipment or material of same type or classification, used for the same purpose, shall be products of the same manufacturer. All material shall be new and of the latest design of manufacturer providing equipment or materials.
   2. Equipment and accessories not specifically described or identified by manufacturer's catalog numbers shall be designed in conformity with ASME, or other applicable technical standards, suitable for maximum working pressure and shall have neat and finished appearance.

B. Electrical Characteristics:
   1. It shall be the responsibility of this Contractor to ensure that the voltage and current characteristics of the electrical equipment furnished by him shall be suitable for the electrical services as specified.

C. Lubricating Devices:
   1. Provide oil level gauges, grease cups, grease gun fittings for machinery bearings as recommended by machinery manufacturer; where lubricating means are not easily accessible, extend to accessible, extend to accessible locations. Furnish all grease gun fittings of uniform type.

D. Belt Guards:
   1. Provide guards to enclose belts, pulleys, sheaves or belt-driven equipment. Construct of galvanized expanded or perforated sheet steel, or 1" mesh wire screen in angle frame with steel angle or channel mounting supports; make guard easily removable for access to belt, pulley or sheave. Conform to codes or regulations of agencies having jurisdiction. Provide access holes for tachometers.

2.04 SLEEVES

A. Extend through construction.
   1. For Insulated Piping: Sized to allow for insulation.

B. No. 22 USSG galvanized iron through:
   1. Interior floor slabs.
   2. Ceilings.
   3. Walls and partitions.

2.05 ESCUTCHEONS

A. Cast iron or cast brass set screw type.

B. Pressed steel.

C. For exposed piping through floors or walls.

D. Finish at exposed walls: Chrome plated.

2.06 NAMEPLATES AND DEVICE PLATE MARKINGS

A. Install nameplates on all electrical equipment supplied under his Contract. This shall include all safety switches, motor starting switches, motor starters, control cabinets, panels, temperature motor control centers, and unit substations designating the equipment served.

B. Plates shall be laminated plastic 1/2" x 2" or larger in dimension, fastened with counter sunk oval head chrome plated machine screws. Lettering shall be 3/16" high engraved black on white plated.
(Nameplates shall be plastic glued back punched letters as produced by Dymo labeling devices. Letters shall be 1/4" high).

C. Submit an itemized schedule of proposed markings for approval.

PART 3.00 - EXECUTION

3.01 SUPERVISION

A. All work shall be performed by competent mechanics under supervision of an experienced erection supervisor. Upon initiation of construction, keep a suitable force for men (including supervisory personnel) on the site at all times in order to place all sleeves, inserts, and fixtures, and provide all other openings as are required for the satisfactory installation of equipment.

3.02 COORDINATION

A. Schedule construction and time limitations for each phase of the work. Work shall be coordinated to permit proper setting of the work of other trades.

B. Where piping work and appurtenances are in place prior to completion of adjacent concrete and masonry work, they must be protected against damage and displacement until construction is completed.

3.03 CUTTING AND PATCHING

A. Cutting:

1. If an opening or chase for the work in new construction is required, notify the GC of such requirement in ample time for the GC to make such provisions.

2. Provide sleeves for all items furnished and set in new construction. Sleeves in exterior walls or located where moisture must be restricted shall consist of schedule 40 black steel pipe cut to match thickness of wall or floor. 1/4" thick steel plate extending 2" beyond the outside diameter shall be continuously welded midway of the length of the sleeve. Pipe or conduit shall be accurately centered within the sleeve. The remaining annular space shall not be less than 1/2 for pipe up to 3", 3/4" for pipe greater than 3". Impregnated rope shall be packed in, at both ends to a point giving a 2" recess in the annular space. The remaining 2" recess shall be sealed with a resilient, non-hardening sealer, Tremco Mono-Lasto-Meric or approved equal.

3. Cutting, chasing, or boring in the existing building shall be done by this Contractor. Where existing foundations or walls below grade are involved, specific instructions shall first be obtained from the Commissioner.

4. Measure all existing openings such as doorways, shafts, windows, hatchways, etc., through which equipment may have to be transported or moved. Include in bid any and all necessary widening of existing openings, or any other change in the existing structure necessary to place his materials and equipment in the proper position. All such alterations or changes shall be completely restored to the original condition, including patching, immediately after the necessary is passed.
5. Cutting, chasing or boring will not be permitted in bearing walls, trusses, girders, or similar structural items unless special permission is obtained from the Commissioner. Be responsible for damages resulting from failure to observe this provision.
6. Where not indicated on drawings or specified as work by other trades, provide all holes, chases and openings in or through construction elements or equipment required for his work. Where such holes, chases and openings are not permitted by the Commissioner, relocate work to clear obstructions as directed. No additional compensation shall be allowed for this work.

B. Patching:
1. Restore surfaces to original condition with materials coordinated with the G.C.
2. Patching shall be done by men skilled in the trade but paid for by this Contractor. Finishes shall be restored to match the surrounding or adjacent surfaces perfectly in material, color and texture.
3. Patch painting shall be done by this Contractor.

3.04 TEMPORARY OPENINGS

A. Temporary openings not indicated on the drawings which may be required for purpose of bringing equipment into building shall be provided as required subject to the approval of the Commissioner. Perform work of providing protecting and maintaining openings and of restoring structure.

B. Holes provided in general construction work to permit installation of piping for temporary plumbing services shall, after removal of such piping, be patched as specified.

3.05 CLEARANCE FROM ELECTRICAL EQUIPMENT

A. Piping: Prohibited in electric room and closets, telephone rooms and closets, elevator machine rooms, and shall not be installed within 5 feet of transformers, substations, switchboards, motor control center, standby power plant, motors.

B. If 5 foot minimum is totally unavoidable, provide sleeve drained outside of electrical equipment room where approved by Commissioner.

3.06 TESTING, ADJUSTING AND BALANCING

A. Make all required adjustments to Plumbing system devices until all specified performances are met. Before commencement of construction, test existing equipment to establish output, etc. Submit certified reports indicating motor and compressor amperage draw, rpm, discharge pressure, suction pressure and setting of all controllers.

3.07 CLEAN-UP

A. Be responsible for the general clean-up of all areas affected by the work in the Contract. All rubbish and accumulative material shall be removed from the premises and the premises left "broom clean" upon completion.

3.08 SUPPORTS, HOUSEKEEPING PADS AND STANDS

A. Housekeeping Pads:

1. Housekeeping pads will be provided by the GC.
2. Provide to the GC dimensions, size of foundation bolts, methods of setting, aligning and anchoring of equipment as recommended by manufacturer of equipment. Make minimum height above finished floor 4" and extend outer edges 2" minimum beyond machinery bed-plate. Submit shop drawings for approval.
3. Supply to the GC foundation bolts, sleeves, washers, nuts and templates to locate position of bolts. Make sleeves of steel pipe; finish flush with top of rough concrete. For anchorage, make embedded end of bolts hooked, or threaded with nut and square plate.
4. All concrete equipment bases that are installed on vibration isolators, all anchor and thrust blocks and all piping supports in trenches shall be provided under the work of this Section.
5. All concrete work shall conform to A.C.I. standards.
6. Provide 1" thick grouting between machinery base plate and concrete pad; fill completely the space between them. Clean top of pad; wet before grouting. Do not remove leveling wedges before grout reaches its final set. Fill voids left by removal of wedges with grout to make neat appearance.

B. Where supports, stands and suspended platforms for machinery, tanks or other equipment are indicated or specified in mechanical work sections, perform as follows:
   1. Design and construct supporting structures of strength to safely withstand stresses to which they may be subjected, and to distribute properly the load and impact over building areas. Conform to applicable technical societies' standards, also to codes and regulations of agencies having jurisdiction.
   2. Locate supports for tanks so as to avoid undue strain on shell and interference with pipe connections to tank outlets.
   3. For tanks containing tubes, check support locations for clearances to pull tubes.
   4. Mount power-driven equipment on common base with driver, unless otherwise indicated, specified or approved.
   5. Submit detailed shop drawings of all supports; obtain approval before fabricating and constructing.

C. Floor Stands:
   1. Unless otherwise indicated, where equipment is indicated or specified to floor mounted on stands or legs, construct of structural steel members or steel pipe and fittings; brace and fasten with flanges bolted to floor.

D. Suspension Support for Pipes, Equipment:
   1. Unless otherwise indicated, all pipes and equipment that are suspended shall be connected directly to the building steel. Where hangers are required between building steel points, supplementary steel members shall be added by the Contractor as required to adequately support the load.
   2. Pipes shall not be supported from other pipes or equipment.

3.09 PAINTING AND FINISHING

A. Except as specified herein, the finished painting of Plumbing Work within the building and on the roof shall be as specified in Section 220700.

B. All plumbing equipment shall have a factory applied prime and finish coat of paint. Galvanized surfaces shall be considered as finished surfaces for equipment rooms and items concealed from view. Plastic products shall be acceptable without a finish coat of paint. All items of equipment marred or rusted, even though factory finished, shall be repainted.

3.10 IDENTIFICATIONS

A. Piping System:

1. All piping systems shall be identified by the name of contents and the direction of flow in accordance with ANSI A13.1 (1981).
2. Name of contents and directional arrows shall be placed near each valve, on both sides of pipes passing through walls, on long pipe runs at 30-foot intervals.
3. Names of contents and directional arrows shall be laminated in plastic and wraparound pipe marker as manufactured by Seton Nameplate Co., or approved equal.

B. Equipment:

1. All items of plumbing equipment shall be identified by approved nameplates by Contractor furnishing equipment.
2. Nameplates shall be securely affixed to each individual piece of equipment and also to controls for that equipment.
3. Nameplates shall be aluminum 2-1/2" x 3/4" with black enamel back-ground etched or engraved natural aluminum lettering. Manufacturer shall be Seton Nameplate Company or approved equal.
4. Equipment shall be identified as to its type and unit number.

C. Valves:

1. Identify valves and other parts of mechanical systems by means of polished and lacquered brass or aluminum tags, minimum 1- 1/2" round or octagonal, with stamped letters and numbers 1/2" high and filled with black paint. Tag must bear name of particular plumbing or sprinkler system involved and identifying number.

D. Charts:

1. Charts of valves including valve identification number, location and purpose shall be furnished in duplicate.
2. Charts of piping system identification shall be furnished in duplicate. Charts shall include the following:
   a. Service
   b. Color field
   c. Legend
   d. Color of letters
3. One (1) copy of each chart shall be mounted in a wood frame with clear glass front, and secured to wall, as directed.

4. Second chart shall be prepared for use in location as directed, provided with approved transparent plastic enclosure for permanent protection. Two (2) holes shall be furnished at top of plastic enclosure to allow for affixing an 8" length of nickel-plated bead chain. Each hole to be reinforced by a small brass or nickel grommet. Plastic enclosures as furnished by Seton Nameplate Company.

3.11 FIRE-STOP PROTECTION

A. By GC.

3.12 ACCESS PANELS

A. By GC.

3.13 ELECTRICAL WIRING DIAGRAMS

A. Electrical wiring for safety and interlocking controls for motors, motor starters and other electrical apparatus and devices shall be provided by this Contractor, except for wiring of fractional horsepower motors which shall be by the Electrical Contractor. Power wiring will be under another Division.

B. Prepare and submit for approval terminal point to terminal point completely coordinated and integrated wiring diagrams for all wiring.

C. Submit specific wiring diagrams for factory-installed equipment wiring.

3.14 CLEARANCE FROM ELECTRICAL EQUIPMENT

A. Piping or Ductwork: Prohibited in electric room and closets, telephone rooms and closets, elevator machine rooms, and shall not be installed within 5 feet of transformers, substations, switchboards, motor control center, standby power plant and motors.

B. If 5 foot minimum is totally unavoidable, provide sleeve drained outside of electrical equipment room where approved by Commissioner. In no case however, shall piping or ductwork be installed above electrical equipment described above.

3.15 DEMOLITION, REMOVALS AND ALTERATIONS

A. All existing equipment, piping, controls, supports, accessories, etc., shall be removed unless otherwise indicated, required for the operation of equipment or systems to remain, or required for continuity of service to areas outside the work scope.

1. If the Contractor is unclear as to what must be removed, he shall notify the Commissioner prior to demolition.

B. Modify existing equipment and/or systems as required by the drawings or specifications and as may be required when such work is uncovered and found to interfere with the completion of work in this contract or other contract work.

C. Remove all demolition material from the project site.

3.16 EXCAVATION AND BACKFILL

A. All excavation is unclassified. The contractor shall inspect the site and make allowance in his bid for soil to excavate since no compensation will be given where rock is encountered.

B. The contractor, unless otherwise noted on the drawings, shall do all excavations for trenches, foundations, and pits of whatever kind necessary for the installation of this work. Bottom of trenches shall have the proper uniform grade wherever possible, or unless otherwise directed.

C. Trenches are to be excavated to the widths, lines and grades indicated on the drawings and/or specified in the appropriate sections of these specifications. Trenches for piping are to be excavated to a minimum width of one foot (1') plus the outside diameter of the pipe. The trench shall be excavated in a manner such that the pipe will be located in the center of the trench with the trench bottom having the proper uniform grade in the direction of flow. Trenches for water services shall be deep enough to provide a minimum of four feet cover.

D. In earth excavation, trenches shall be carried to invert of pipe. If rock is encountered, carry trench to a point six inches (6") below pipe invert. No pipe shall be bedded directly upon rock but shall be cushioned by a six-inch (6") layer of selected crushed stone or gravel.

E. Shore, sheet-pile and brace excavations as required to maintain them secure and to adequately protect life and property; remove shoring as the backfilling progresses, but only when banks are safe against caving or collapse.

F. Water shall be removed from all excavations promptly and continuously throughout the progress of the work. Keep excavations dry at all times until the pipe and/or accessories are installed. Precautions shall be taken to protect uncompleted work from flooding during storms or from other causes. All necessary precautions shall be taken to prevent disturbance of, and to properly drain, the areas upon which concrete is to be placed. Provide, maintain and operate such sumps, pumps, hoses, piping and other related approved means and equipment, as may be necessary to keep the excavation free from water during all stages of the construction operations and course of work. Provide such sumps and pumping as may be also required to prevent the flow of surface waters into excavated areas and into any and all areas where construction or installations are in progress. Pumped or diverted water shall not adversely affect adjacent property or any other work under construction. Water levels shall be kept at the lowest point to safely execute and maintain the work during the entire course of the work.

G. Do not install conduit or manholes in frozen ground. When freezing temperature may be expected, do not excavate to the full depth indicated, unless the conduit and/or manholes can be installed immediately after the excavation has been completed. Protect the bottoms so excavated from frost if installation of pipe and/or manholes is delayed.

H. All excavations shall be left open until work has been inspected and approved by the Commissioner. Sufficient time shall be allowed after notice is given that work is ready for inspection for making all examination and tests. Under no circumstances shall excavated material be left, even temporarily, where it will interfere with the building or other contractor's operations.

I. Excavations which pass under or within eighteen inches (18") of columns or wall foundations shall be backfilled up to the level of the columns or wall foundations with concrete mixed in proportions to one part cement, three parts sand and five parts coarse aggregate. Excavations shall not undermine foundations at a slope of 1:1 or greater.

J. All earth backfilling shall be made in layers not to exceed eight inches (8") and each layer shall be thoroughly tamped into place before the next layer is placed. Backfilling shall be clean earth, free of stone, pieces of concrete, rubbish and other foreign materials. Material frozen in lumps or material softer than the adjoining soil shall not be used in backfilling. The contractor shall distribute on the premises as directed all earth remaining after the backfilling.

K. Any necessary blasting shall be performed by experienced and competent personnel in the most careful manner. All local ordinances and laws relating to blasting and storing of explosives must be strictly observed. No explosives shall be stored on the project property. All contractors shall be notified prior to any blasting. Explosives used shall be subject to approval of the Commissioner. The blasting shall be properly covered with blasting mats. Any blasting required shall be performed at such times as to meet reasonable request of the Commissioner.

L. Any rock encountered within five feet (5') of pipes or building walls shall be removed without blasting.

M. Provide adequate temporary crossovers for pedestrians and vehicular traffic including guardrails, lamps, flags, as directed; remove same when necessary for such protection ceases.

N. Material shall be clean, selected earth obtained either from required excavation or from other sources. It shall be used to backfill excavations up to the proper rough grade level required by elevations shown on the drawings. Excavated material used for fill shall be clean, free of loam containing no boulders or stone over 4" in diameter, nor debris, vegetable matter, roots, sod, scrap metal or glass, refuse or other undesirable matter.

O. Provide and place any additional fill material from off the site as may be necessary to produce the rough sub-grades required. Fill obtained from off site shall be of kind and quality as specified herein before for excavated material. Providing off site fill shall include furnishing, transporting, placing, and consolidating.

P. Backfilling:

1. Backfill trenches only after locations of duct banks and appurtenances have been recorded.
2. All lumber, rubbish, and braces shall be carefully removed from excavations before backfilling. Backfill all voids where sheet piling, shoring and bracing is removed.
3. Materials used for backfill shall contain water content proper for compaction. If the materials are dry, add the required amount of water for compaction and thoroughly mix the soils and water. If the materials contain excessive moisture, they shall be allowed to dry until the proper moisture content for compaction is present.
4. For a depth of at least 12 inches above the top of the duct bank, pipe or conduit backfill by hand with earth or granular material. Tamp this backfill thoroughly in layers not exceeding 4 inches in thickness, taking care not to disturb or injure the pipe.

5. For the remaining trench depth, backfill with material as specified in the preceding Section. Compact thoroughly the backfill here referred to with a heavy rammer or an approved mechanical tamper. Backfilling under pavement and other surfacing shall be compacted solidly with mechanical tampers in layers not more than 6" thick, measured loose and each layer shall be compacted to minimum of 95% of the ASTM D1557 maximum density before the next layer is placed. Backfilled areas in locations to be landscaped or not otherwise specified above shall be compacted to not less than 90% of the referenced density test, or as required, to prevent noticeable shrinkage or settlement.
6. Puddling with water will not be permitted for backfill. Do not attempt compaction when solid is wet with too much moisture or frost in order to avoid rebound and swelling at a later date.

Q. Pavement Patching:
1. Do not install work when temperature is below 40 degrees F or when subgrade is in wet or frozen condition. Do not place any paving materials on wet surfaces, or on previously prepared surfaces until they are dry and thoroughly swept clean of all loose and foreign material that might interfere with proper penetration of bituminous material.
2. Patch all paved areas that have been broken as a result of excavation work.
3. Patch paving for roads and curbs shall be performed in strict accordance with applicable provisions of the State, County or Local Specifications, will all workmanship in accordance with best of established trade practices, finishing all work to true profiles and contours, smooth, even surfaces, without high spots or depressions, thoroughly and evenly rolled to even textured surface, free from visible joints of patches. No rough work will be accepted.
4. Concrete sidewalks shall be removed to the nearest seam or joint. The patching shall match the adjacent material and complete the removed section with no visible joints or patches.

3.17 INTERFERENCE WITH THE COMMISSIONER'S NORMAL OPERATION

A. All work shall be performed in such as not to interfere with the normal work operations in adjacent spaces or buildings.

B. Do not block or restrict the means of egress of adjacent spaces, decrease the fire ratings of walls, partitions, ceilings, doors or combination thereof of adjacent spaces or means of egress, interrupt safety systems or in any way adversely affect the safety of people or materials.

C. Provide containment measures to prevent dirt, dust or fumes from reaching adjacent work spaces.
D. All personnel traffic and material delivery shall be routed so as to absolutely minimize travel through adjacent work areas.

3.18 CONNECTIONS TO EXISTING WORK
A. Connect new work to existing with minimum interference.
B. Rebalance entire water system where new work connects to the existing system.

3.19 TEMPORARY SERVICE
A. Temporary services are specified under Division 1, "General Requirements".

END OF SECTION

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SECTION 22 05 13

ELECTRIC MOTORS AND MOTOR CONTROLLERS

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to complete the Electric Motors, Motor Controllers as shown on the drawings and as specified herein, including but not limited to the following.
   1. Furnish and install motors required for plumbing equipment.
   2. Furnish motor starters required for plumbing equipment.
   3. Coordination of the installation of motors and starters.
   4. Motor control actuating and actuated devices required for plumbing equipment.
   5. All control wiring other than power wiring.

1.03 RELATED WORK

A. Plumbing equipment.
B. Electrical specifications for installation of motor starters and power wiring.

1.04 QUALITY ASSURANCE

A. NEMA
B. New York City Electrical Code
C. IEEE

1.05 SUBMITTALS

A. Shop Drawings:
   1. Wiring diagrams of all manufactured equipment.
   2. Electrical equipment terminal-to-terminal point connections.
   3. Elementary diagrams.
   4. Integrated and coordinate wiring for safety and interlocking controls for motor starters and motor actuating and actuated devices.
   5. Motor nameplate data including: Motor horsepower, full load amperes, voltage, number of phases, service factor and locked rotor amperes. Include manufacturers recommended over-current device and thermal overload.
   6. Provide starter shop drawing indicating manufacturer, size, type, number of poles, and voltage.

B. Materials Data: Manufacturer's printed data, test data, recommendations and installation.

1.06 DEFINITIONS

A. Power Wiring (Motor Power Circuit): Power circuit operating at 120 volts or more, and carries electrical input energy to starter and from starter to motor.

B. Control Wiring (Motor Control Circuit): Other than power wiring, all other wiring intended for directing or indicating the performance of a motor starter, including connections to actuating and actuated devices.

C. Motor Actuating Device: Any device performing a switching function in a motor control circuit (i.e., pushbuttons, hand-off-automatic switches, automatic contacting devices, time clocks, etc.).

D. Motor Actuated Device; any device which functions in response to voltage received from a motor control circuit (i.e., pilot lights, solenoids, PE, EP, damper motors).

PART 2.00 - MATERIALS

2.01 MOTORS

A. General:

1. Motors shall be of proper power and speed to suit the specified makes of equipment. If other makes of equipment (other than specified) are accepted, the proper adjustment of motor speed and power must be included without additional cost. Sizes and types shall be submitted for approval before the equipment is purchased.
2. Motors shall be open drip-proof, squirrel cage induction motors rated at 1,750 rpm or 3,500 rpm, as scheduled. Where motors are multi-speed, speeds shall be as scheduled or specified.
3. Motors voltage shall be as scheduled or specified.
4. Unless otherwise specified, motors shall be suitable for operation in either direction of rotation.
5. Motors shall be built in accordance with current NEMA standards (MG-1), except as noted in these specifications.
6. Motors shall be NEMA Design B unless otherwise noted.
7. Fractional horsepower motors less than 1/2 HP shall be 120 volt, single phase, 60 Hz. Motors 1/2 HP and above shall be 60 Hz, three phase with voltage as scheduled or specified.

B. Insulation:

1. Insulation system employed shall have been tested by the manufacturer and will be Class B or F.
2. Temperature rise shall be in accordance with NEMA limits for the Class of Insulation, Service Factor and Enclosure specified.
3. Unless noted otherwise, motors will be rated for 40 degrees C ambient operation.

C. Mechanical:
1. Motors shall be built in NEMA standard T-Frame sizes.
2. Drip-proof and totally enclosed motor frames will be of rugged construction and material will be steel, aluminum or cast iron.
3. End bracket will be of cast iron or aluminum construction and aluminum must have steel inserts in the bearing re-lubrication.
4. Bearings will be anti-friction type and bearing housings will be equipped with plugged provision for re-lubrication.
5. Bearings will be rated for minimum L-10 life of 20,000 hours assuming bearing load to be calculated with a NEMA minimum V-belt pulley, so located that the center line of the belt load will be located at the end of the NEMA standard shaft extension.

D. Noise Levels:
1. Sound power levels for all motors will be no greater than the guidelines recommended by NEMA Standard MG1-12.49.

E. Tests and Test Data:
1. Motors will be 100% production tested and quality control checked to assure compliance with this specification.
2. The insulation system will be tested by procedure outlined in NEMA Standard MG1-12.03.
3. A load test will be performed on each motor to assure compliance with the energy-efficiency section of this specification.
4. Typical test data on each motor will be available if requested.

2.02 MOTORS STARTERS

A. Fractional Horsepower Starters for Motors less than 1/2 HP:
1. Thermal overload relay with field adjustment capability.
2. NEMA I general purpose enclosure with flush mounted enclosure and plate.
3. Quick-make, quick-break mechanism.
4. Pilot light indicating activation.
5. Speed control, where indicated.
6. Magnetic starter type with HOA switch where required to be automatically controlled by a motor actuating device.

B. Starter for Motors 1/2 HP and above:
1. Combination magnetic starter with unfused, disconnect switch, unless indicated to be fused, or of the circuit breaker type.
2. Provide an individually fused transformer to permit external control circuit operation at a nominal voltage of 120 volts. Ground unfused secondary wire.
3. Provide NEMA I Class A enclosure with running overload relay and disconnect for each pole.
4. Size fusible switch gaps for the time delay type fusing. For combination circuit breaker. Provide ambient compensating features extending to 50 degrees C.
5. Magnetic Starters NEMA Size 3 and larger: Equipped with an auxiliary control circuit relay arranged to permit the actuation of the starter without introducing holding coil currents into the external control circuit.

6. Magnetic Starters NEMA Size 5 and larger, Intended to Operate at a Power Circuit Voltage in Excess of 250 Volts Line-to-Line: Equipped with an integral phase failure protection relay system.
7. Equip starter with a low voltage, manual reset "lockout" relay arranged to open the main holding coil circuit following a loss of line voltage, and then to maintain contact features (if any) in the external control circuit.
8. Where specified or scheduled provide reduced voltage starter.
   a. Locked rotor motor current shall not exceed value given in NEMA Standard MG-1.
   b. At no time during the starting and running period following initial closing into the line shall be an "open conductor" condition exist in any phase of wiring up to the motor terminals.
   c. Breakaway and accelerating torque produced by the motor during start-up: Adequate for the mechanical loading on the motor.
   d. Starter Type: Magnetic, combination reduced voltage autotransformer with fused disconnect switch.
9. Where motors are specified as multi-speed, provide multi-speed starter with speed and direction selector control switch.
10. Where motors are specified to be reversible, provide reversing start and direction selector switch.
11. Combination Type Motor Starters: Equipped with approved padlock and key and a means for double padlocking its manual line disconnect in the open position.
12. Motor Starters: Equipped with an engraved lamicoid nameplate permanently fastened on the outside of the starter cover, with high white lettering on a black background identifying the motor and system controlled.
13. In addition to auxiliary contacts required for interlocking or indicating purposes, provide magnetic starters with one normally closed and one normally open additional contacts for future use.
14. Enclosure Sizes and Wiring Terminals of Motor Starters: Suitable for the application of copper power and control circuit wires.
15. Motor Starters, which are not part of Packaged Equipment: One manufacturer throughout the project.
16. Wire all starter control wires for external connection including spare auxiliary to terminal blocks. Each terminal block point is identified with unique number shown also on submitted wiring diagrams.

2.03 MOTOR CONTROL ACTUATING AND ACTUATED DEVICES

A. Furnish mount and wire up manual control actuating devices and pilot lights required in starter covers.

B. Motors Control Actuating and Actuated Devices in the Starter Covers: Housed in NEMA Class I general purpose enclosures, except that where intended for use in damp or hazardous locations, provide enclosures of the proper NEMA classification of the conditions. Gang together in a single enclosure and wire up to a terminal block two or motor control actuating or actuated devices at a single location.

C. Contacts with Motor Control Actuating Devices: Rated at not less than 10 amperes AC at 250 Volts regardless of the actual duty they are required to perform.

D. Motor control actuated devices intended to operate in conjunction with motors supplied from power circuits having a voltage in the range of 100 to 125 volts and 200 to 250 volts: Suitable for operation in this range.

E. Pushbuttons: Heavy-duty oil-tight return momentary type. Provide flush mounted in stainless steel faceplate with pilot light and label indicating equipment served, where stations are remotely located.

F. Selector Switches: Heavy-duty oil-tight maintained contact type.

G. Pilot Lights: Heavy-duty type with resistor or transformer, equipped with nameplates indicating the operating conditions they annunciate.

H. Devices such as pushbuttons, pilot light and selector switches, where mounted in enclosure other than the cover of the starter: Equipped with nameplates indicating the motor with which they are associated and their function (on-off, manual-automatic, etc.).

I. Nameplates: White engraved lamicoid, permanently fastened lettering and a black background.

2.04 APPROVED MANUFACTURERS

A. Motors: Gould, General Electric, Westinghouse, Baldor, Century or approved equal.

B. Starters: Cutler-Hammer, Westinghouse, Square D, Allen-Bradley or approved equal.

PART 3.00 - EXECUTION

3.01 INSTALLATION

A. Coordinate with other work described under "Related Work".

B. Comply with the requirements of the New York City Electrical Code for the control wiring work.

C. Install in accordance with the equipment manufacturer's instructions.

D. Provide all control and interlock wiring for all provided plumbing equipment.

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END OF SECTION

SECTION 22 05 23

GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1.00- GENERAL

1.01 GENERAL REQUIREMENTS
A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to the installation of valves as shown on the drawings and as specified herein, including but not limited to the following:
1. Furnish and install valves and accessories.

1.03 RELATED WORK
A. Pipe, Tube and Fittings - Section 221000.
B. Hangers & Supports for Plumbing Piping and Equipment - Section 220529.
C. Piping Insulation - Section 220700.

1.04 QUALITY ASSURANCE
A. UL - Underwriters Laboratory
B. New York City Building Code
C. FM - Factory Manual
D. AWWA - American Water Works Association
E. ANSI - American National Standards Institute

1.05 SUBMITTALS
A. Shop Drawings:
1. Valves.
2. Valve boxes and accessories.

1.06 VALVES - GENERAL
A. Provide all valves and piping accessories required to complete the installation of all plumbing systems indicated on the drawings and as specified.
B. Provide valve tags and charts 2" diameter, 18 gauge aluminum or brass, embossed numbers filled in with black paint, fastened by heavy aluminum or brass hooks/chains on all valves and controls (except equipment shutoff valves).
C. To assure uniformity and compatibility, all grooved end valves and adjoining couplings shall be supplied by a single manufacturer.

D. Gate Valves:
   1. Wedge type with painted iron wheel handles, gland followers in stuffing boxes, and constructed to allow repacking while open and under pressure.
   2. 2" and smaller: Bronze with brazed or screwed joint ends as required by the piping system in which they are installed.
   3. 2-1/2" and larger: IBBM with flanged or grooved ends as required by the piping system in which they are installed. Where controlling equipment: OS&Y rising stem type except where space conditions do not permit the installation of this type of valve. In such cases only, use non-rising stem type.

E. Globe Valves:
   1. All bronze with composition disc, threaded or brazed joint ends as required by piping system in which they are installed.

F. Check Valves:
   1. 2" and smaller: All bronze spring actuated type with push-to connect ends.
   2. 3" and smaller: All bronze swing type with grooved, threaded or blazed joint ends.
   3. 4" and larger: IBBM with flanged joint or ductile iron body with stainless steel trim and grooved ends as required by piping system in which they are installed.

G. Drain valves shall be 3/4" heavy cast brass with composition washers with male thread for hose connections.

H. Provide at the high point of hot water piping system a 1/2" automatic IBBM air release valve, 125 PSI, WOG Class. Pipe drain to spill over nearest floor drain or service sink.
   1. Hoffman Specialty No. 78.

I. Exterior domestic and fire protection water piping shall comply with Local Fire Department and Water Company.

J. Fire standpipe system: UL listed and Factory Mutual approved and in compliance with all other authorities having jurisdiction. Valves shall be iron body bronze mounted (IBBM), OS&Y solid wedge type valves with rising stems for 175 psi minimum working pressures; iron wheel handles shall be painted red. Tamper switch shall be provided on all fire standpipe valves as indicated on the Drawings. Valves requiring tamper switches shall have factory ground flats on the stems.

K. Exterior valves shall conform to all applicable requirements of American Water Works Association C500-61 Standard for Gate Valves for Fire Water Work Services.

PART 2.00 - PRODUCTS

2.01 BASE BID MANUFACTURERS

A. Exterior valves:
1. Clow
2. Kennedy
3. Stockham
4. Mueller

B. Interior valves:
1. Victaulic
2. Apollo
3. Milwaukee
4. Stockham
5. Crane
6. Watts

2.02 EXTERIOR FIRE PROTECTION VALVES

A. Furnish and install all underground control valves and valve boxes for fire protection service and branches as indicated on the Drawings.

B. 4" and larger:
1. UL listed, FM approved.
2. IBBM, mechanical joint ends, 175 psi wwp.
3. Double disc, parallel seats.
4. Seats, gaskets, bolts, and nuts per ASTM specifications.
   a. Kennedy 70X (bell ends)
   b. Kennedy 71X (mech joint ends)

C. Valve Boxes:
1. Three piece screw type to grade and coated with coal tar pitch.
2. Kennedy fig. 121, open left.
3. Cover with word "Fire" cast in.
4. Valve key of required height. Kennedy fig. 122.

D. Install valves and valve boxes in piping as shown on the Drawings, and set plumb and centered with boxes places directly over valves. Earth fill shall be carefully tamped around the valve box to a distance of 4 feet on all sides of the box or to undisturbed trench face if less than 4 feet.

2.03 EXTERIOR DOMESTIC WATER SERVICE VALVES

A. Furnish and install all underground control valves and valve boxes for water service and branches as indicated on the Drawings.

B. Gate Valves:
1. 3" and larger:
   a. AWWA, mechanical joint, 200 psi wwp, IBBM.
   b. Double disc, parallel sent, with operating nut. Valves open left.
   c. Glands, gaskets, bolts and nuts per ASTM specifications.
      1) Kennedy fig. 571X. Other manufacturer will be accepted when required by local authorities.

2. 2 1/2" and smaller:
   a. Bronze, non-rising stem, 125 psi wwp.
   b. Walworth No. 4, threaded ends.
   c. Walworth No. 4 SJ, solder ends.
   d. Wheel handle and extension rod or 1 ¼" operating nut.

C. Install complete with valve boxes and covers set flush with proposed finished grade.
   1. Kennedy, Fig. 121 as specified for the fire service. Coated with coal tar pitch varnish and word "WATER" cast on cover.

2.04 EXTERIOR NATURAL GAS SERVICE VALVES

A. Exterior gas valves shall meet local Gas Company requirements or shall be similar to Style 90 "Dresser" end iron body lubricated plug type:
   1. Walworth No. 2907 modified, 50 psi WOG, with galvanized steel extension pipe and cast iron flush box with lock, marked "Gas".

2.05 INTERIOR PIPING SYSTEM VALVES

A. Domestic water valves tabulated herein are manufactured by Stockham Valve Co., or as noted. Approved equals of Milwaukee, Victaulic, Crane Co., Walworth Co., and Nibcowill be reviewed.

Gate Valves	2" & Smaller	Threaded Solder Ends	B100 B108
	2-1/2" & Larger	Flanged Rising Stem	G623
Globe Valves	2-1/2" & Larger	Flanged	F532
	2" & Smaller	Threaded	B62
Angle Valves	2" & Smaller	Threaded	B222T
Check Valves	3" & Smaller	Threaded Solder Ends	B319Y B309Y
	3" & Smaller	Grooved Ends	Victaulic Series 712
	2-1/2" & Larger	Grooved Ends	Vicatulic Series 716 (Series 717 for Fire Protection Systems)
	4" & Larger	Flanged	G931
Ball Valves (Full Port)	3" & Smaller	Threaded	S206BRRT
	3" & Smaller	Solder	S206BRRS
	1 1/2" - 2 1/2"	Grooved	Nibco G595-Y
Butterfly Valves	2 1/2" & Larger	Grooved	Victaulic Series 608
	2" & Larger	Grooved Ends	Victaulic Vic-300

			MasterSeal™
	2-1/2" & Larger	Grooved Ends	Victaulic Series 608
Check valve for sewage and sump pumps	3" & Larger	Grooved	Victualic Series 317
Balancing Valves	2" & Smaller	Solder	B&G Model CB
Grooved End Check Valves, 300 psi max., ductile iron body, stainless steel spring and shaft.		Pump discharges, except sewage ejectors	Victaulic Series 716
Grooved End Valve Assembly 175 psi maximum CWP	3" through 6"	Sump Ejector System	Victaulic Series 318

B. Drain valves shall be similar to Crane #117 or approved equal.

C. Balancing valve shall be bronze construction, glass and carbon filled TFE seat rings, 1/4" NPT tapped drain/purge port, memory stop and calibrated name plate to assure specific valve setting. Leak-tight at full rated working pressure.
   1. UL listed and FM approved, 175 psi wwp, O.S.&Y., IBBM. Stockham Valve Co. Fig. No. G-634 or Victaulic Series 771.
   2. Valves to 2" and smaller: Stockham No. B-132. Class 200, all bronze, solid wedge, rising stem.

D. Fire standpipe gate valves 2-1/2" and large, UL listed and FM approved, OS&Y, IBBM.
   1. Stockham Valve Co. Fig. No. G634, 175 psig WWP.
   2. Victaulic series 771.
   3. 2" and smaller: Stockham No. B133.
   4. Nibco Valve Co. No. F-607-RW or approved equal for 250 psig C.W.P.

E. Fire standpipe check valves 2- 1/2" and larger, UL listed and FM approved flanged cast iron, IBBM, swing type, 175 psig,
   1. Stockham Valve Fig. No. G939.
   2. UL listed/FM approved grooved end, ductile iron, spring assisted swing type, 300 psi wwp, Victaulic series 716.

F. Fire Pressure Reducing Valve - see Section 211300

G. Low pressure natural gas valves shall be AGA standard bronze gas cocks.
   1. Up to 1" size tee head: Walworth No. 594. Up to 2" size square head, Walworth No. 590.
   2. 2 1/2" and over, flanged, iron body lubricated plug type 175 psi WOG Walworth No. 1796.
   3. Provide operating wrenches with each valve.

4. Gas Solenoid Valves:
   a. 115 V, single phase solenoid valve for normally closed operation.
   b. Provide push-button station to activate solenoid valve, for installation by the electrical trade under Division 16.
   c. ASCO No. 8215.

H. Full port ball valves may be used for domestic water piping as an alternate to gate valves for sizes 3" and smaller. If used, provide extended handles.

I. Pressure Reducing Valve - see Section 211300.

J. Solenoid Safety Shut Off Valve (Domestic Water) - see Section 221100.

PART 3.00 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. The entire plumbing and fire protection systems shall be supplied with valves so located, arranged and operated as to give a complete regulating control to all fixtures and apparatus.

B. Shut-off valves shall be provided on all risers, branch lines and at each piece of equipment.

C. Install check and globe valves on downstream side of the shutoff valve on hot water circulating riser and branch lines.

D. Valves, where exposed and used in connection with finished piping, shall be same finish as the pipe.

E. Provide capped drain valves at the heel of each plumbing water riser and at low points of the horizontal mains.

F. Provide chain operators on all valves 4" and larger located 7'-0" and higher above floor.

G. Provide shut-off valves and check valves on each pump discharge line and shut-off valve only on each pump suction line.

H. Install valves where required for proper operation of piping and equipment, including valves in branch lines necessary to isolate sections of piping. Locate valves so as to be accessible.

I. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward or horizontal plane unless unavoidable. Install valve drains with hose-end adapter for each valve that must be installed with stem below horizontal plane.

J. Where insulation is indicated, install extended-stem valves, arranged in proper manner to receive insulation.

K. Install valves with bodies of metal other than cast iron where thermal or mechanical shock is indicated or can be expected to occur.

L. Do not install bronze valves and valve components in direct contact with steel, unless bronze and steel are separated by dialectic insulator. Install bronze valves in steam and condensate service and in other services where corrosion is indicated or can be expected to occur.

M. Except as otherwise indicated, install gate, ball, globe, and butterfly valves to comply with ANSI B31.1. Where throttling is indicated or recognized as principal reason for valve, install globe or butterfly valves.

N. Select and install valves with renewable seats, except where otherwise indicated.

O. Installation of Check Valves:
   1. Swing Check Valves: Install in horizontal position with hinge pin horizontally perpendicular to centerline of pipe.
   2. Wafer Check Valves: Install between 2 flanges in horizontal or vertical position.
   3. Horizontal Lift Check Valve: Install in horizontal piping line with stem vertically upward.
   4. Vertical Lift Check Valve: Install in vertical piping line with upward flow with stem vertically upward.
   5. Grooved End Spring-Assisted Check Valve: Install in vertical or horizontal piping line with Victaulic couplings.
   6. Air Compressor Lift Check Valve: Install in air compressor discharge line.
   7. Spring Loaded Horizontal Lift Check Valve: Install in horizontal piping line with stem vertically upward.

P. Install valves so that they are accessible for repacking. Install with operating clearance for handle and stem.

Q. On equipment isolation valves install so that valve and piping do not interfere with equipment removal or maintenance. Install unions, grooved couplings, Victaulic couplings, or flanges on equipment side of valves unless valve is flanged type.

R. Provide valves of a design permitting packing while open and under pressure.

S. Provide shutoff valves in supply and return to reach item of equipment such as pumps, tanks, coils, traps, automatic valves and similar items. Valves shall be suitably located to isolate each unit to facilitate maintenance or removal of all equipment and apparatus. Valves 2- 1/2" and larger shall be flanged or grooved end, 2" and smaller shall have a union installed between valve and equipment.

T. Provide drains at low points of all liquid piping systems including each riser. Locate drain valves in Mechanical Equipment Rooms not higher than 6' above floor and pipe to nearest floor drain. Provide caped drain cocks with threaded ends for hose connections at all other drain points. Provide one 100' length of heavy-duty 1" hose.

U. Provide all valves 6" and larger with a rating of over 150 lbs. with a 1" bypass valve of same pressure rating as the bypassed valve.

V. Provide renewable bronze seat rings and bronze spindles for all cast iron body valves.

W. Use globe valves or plug cocks for all throttling service (including throttling service at pump discharges), and where noted on the drawings.

X. If globe valves are not available in the sizes required for installation in the discharge lines from the large pumps, install valves of the lubricated tapered plug type.

Y. Lubricate tapered plug cocks with the manufacturer's proper lubricant for water service before shipment to the job site. Furnish four (4) hand wrenches for each size valve, where gear operators are not required.

Z. Butterfly valves of the lug or grooved end type permitted in lieu of valves indicated above for water service only. 150 lb. construction with totally enclosed weather-proof operator replaceable packing bonnet and material combination as follows:
   1. Galvanized iron body, stainless steel stem and disc, steel ring and Buna seat.
   2. Ductile iron body, elastomer encapsulated ductile iron disc with integrally cast stem.

AA. Safety valve discharges shall be piped and extended to drains. From the drain and the elbow provide a common 3/4" drain line extended to discharge down 6" above the nearest floor drain.

BB. Provide chain-operated sheaves and chains were indicated on drawings and for all valves 6" and larger which are more than 6' above the floor.

END OF SECTION

SECTION 22 05 29

HANGERS & SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS
A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to provide Hangers and Supports for Plumbing, Piping and Equipment as shown on the drawings and as specified herein, including but not limited to the following:
1. Pipe supports.
2. Anchors and guides.
3. Base supports.

1.03 RELATED WORK
A. Pipe, Tube and Fittings - Section 221000
B. Plumbing Insulation - Section 220700

1.04 QUALITY ASSURANCE
A. Underwriters Laboratories - U.L.
B. Factory Mutual - F.M.
C. Provide Pipe Hangers and Supports - MSS-SP-58.
D. Select and Apply Pipe Hangers - MSS-SP-69.
E. Fabricate and Install Pipe Hangers and Supports - MSS-SP-89.

1.05 SUBMITTALS
A. Shop Drawings:
1. Pipe Hangers and Supports.

1.06 SPECIFIC REQUIREMENTS
A. The Contractor shall be responsible for the proper transfer all loads of the piping system to the structure. No additional cost to the Commissioner will be allowed for any corrective work during construction.
B. Supports and hangers shall be provided for all horizontal and vertical piping. The hanger design shall conform to the ANSI Code for Pressure Piping. Hangers shall be kept outside of pipe insulation.
C. All bracket clamps and rod sizes indicated in these Specifications are minimum size only. This Contractor shall be responsible for structural integrity of all supports. All structural hanging material shall have a safety factor of five (5) built in.
D. All horizontal cast iron pipe shall be supported every five (5) feet and at each hub and/or "no-hub" clamping assembly. When a concentration of fittings occur, additional support shall be installed consistent with good trade practices. "No-hub" system must be supported in accordance with Standard CISPI-310-78.
E. Fire standpipe piping shall be independently supported with UL/FM hangers and supports.

F. All pipes supported in conformance with seismic restraint requirements.

PART 2.00 - PRODUCTS

2.01 PIPE SUPPORTS, HANGERS AND INSERTS

A. Provide one of the following types of hanger for overhead support of horizontal piping:
   1. For copper tubing where hangers are in direct contact with tubing, use clevis type steel hanger, copper plated with supporting rod to suit.
   2. For all piping 2 1/2" and larger: Use clevis type hangers.
   3. Piping 2" and smaller: Swivel ring type.
   4. Provide supporting rods for hangers of diameter as indicated and where not indicated, as specified under "Horizontal Pipe Supports Schedule" hereinafter, of lengths as required, with double locknuts for each.

B. Where hanger rods leave unsightly holes in ceilings in finished areas, provide steel ceiling plates or cast iron ceiling plates with set screw.

C. Provide one of the following to support horizontal piping from wall:
   1. Where no provision for expansion and contraction is required and pipe can be located close to wall, use steel J-hook, suitable for pipe sizes up to 3".
   2. For hanger suspension, 750 lb. maximum loading, use light welded steel bracket with hole for one rod up to 3/4" diameter. For additional rod suspension, use with this bracket steel clip for pipe sizes up to 3".

D. Vertical piping supports for copper tubing where hangers are in direct contact with tubing, use copper tubing riser clamps. For steel cast iron pipe use steel extension pipe clamps.

E. Where beam clamps are required, use malleable iron "C" clamps with case hardened cup pointed set screw and retaining strap or beam clips as required or directed.

F. Concrete inserts shall be approved for local use and shall be black malleable iron universal type, for threaded connections with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms.

G. All insulated pipe shall be protected at supports by pipe saddles. Pipe saddles for use on hangers shall be Insul-Shield pipe saddles as manufactured by Insul-Coustic Corp. or approved equal.

H. Steel anchors of an approved design shall be provided where indicated or required for proper control of stress in piping due to expansion. Anchors shall be made of structural materials of heavy cross section and securely fastened to building construction. Submit detail drawings of approval installation.

I. Provide pipe alignment guides where indicated, required or directed, to guide the expanding pipe to move freely from anchor points in expansion joints, loops or bends. Construct with angles or channels. Submit detail drawings for approval before installation.

2.02 ACCEPTABLE MANUFACTURERS

A. Pipe supports shall of the following type and figure number, manufactured by C&P, F&M, Grinnell, or approved equal.

B. Pipe Hanger Schedule:

	C&P	F&M	Grinnell
Beam Clamp	268	282	----
Clevis Hanger	100	239	260
180° Shield	265P	80	----
Pipe Saddle	351	170 & 180 series	1700 series
Rigid Trapeze U-Bolt	371 382	176	Std. 45 137
Riser Clamp	89 or 126	241	261
Double Bolt Pipe Clamp	304	261	295
Welding Beam Attachment	113B	751	66
Insert	650	----	280
Continuous Slotted Insert	1480	190	----

C. Insulation Protection
For all insulated pipe furnish clevis hangers with welded shields and approved equal to C&P, Inc., Fig. 100-SH.

D. Pipe Supports in Pipe Chases
Supports shall securely hold piping, prevent vibration, etc. Provide pipe supports and channels as required made Grade KJA Cycolac DH self-extinguishing ABS as manufactured by the Summer Corporation or approved equal.

PART 3.00 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. Provide necessary structural members, hangers and supports of approved design to keep piping in proper alignment and prevent transmission of injurious thrusts and vibrations. In all cases where hangers, brackets, etc., are supported from concrete construction, care shall be taken not to weaken concrete or penetrate waterproofing. All hangers and supports shall be capable of screw adjustment after piping is erected. Hangers supporting piping expanding into loops, bends and offsets shall be secured to the building structure in such a manner than horizontal adjustment perpendicular due to expansion. All such hangers shall be finally adjusted, both in the vertical and horizontal direction.

B. Where piping is run near the floor and not hung from the ceiling construction but is supported from the floor, such supports shall be of pipe standards with base flange and adjustable top yoke, 101 or approved equal.

C. Except where otherwise noted, piping shall be supported from structural steel only. Provide supplementary steel where required.

3.02 HANGER SPACING:

A. Horizontal steel piping shall be supported as follows:

PIPE SIZE (Inches)	ROD DIAMETER (Inches)	MAXIMUM SPACING (Feet)
Up to 1	3/8	8
1 ½ to 2	3/8	10
2 ½ to 3	1/2	12
4 to 5	5/8	15
6	3/4	17
8 to 12	7/8	20

B. Horizontal copper piping shall be supported as follows:

PIPE SIZE (Inches)	ROD DIAMETER (Inches)	MAXIMUM SPACING (Feet)
Up to 1	3/8	5
1 ¼ to 2	3/8	8
2 1/2	1/2	9
3 to 4	1/2	10

C. All hub or joint pipe shall be supported within the above recommendations for steel and at each joint.

D. Plastic piping systems such as (polyvinyl chloride pipe (PVC) and polypropylene piping) shall be supported at intervals recommended by the manufacturer for a 120°F fluid temperature. Other specialty piping systems, such as PVDF tubing for specialty water systems, shall be continuously supported as recommended by the manufacturer.

E. All pipes shall be supported within one (1) foot of elbows, valves, flanges, or fittings.

F. All vertical piping shall be supported at 10 feet maximum intervals or designed as necessary to meet MSS guidelines.

3.03 PIPE SUPPORTS, HANGERS AND INSERTS

A. Support horizontal piping in accordance with the following schedule:

1. All horizontal steel and copper pipe shall be supported at maximum intervals as follows:
   Steel pipe - up to 1- 1/4" - 8'-0"; 1- 1/2" to 2- 1/2" - 10'-0"; 3" and larger - 12'-0".
   Copper tube and Brass pipe - up to 1- 1/4" - 6'-0"; 1- 1/2" to 2- 1/2" - 8'-0"; 3"and larger - 10'-0".

B. Support vertical piping with clamps attached to the pipe, resting on the floor slab. In general, one clamp for each two floors, one clamp at each floor for copper tubing. Where pipes are open shaft, provide forged steel bar brackets to wall.

C. Support hangers from concrete inserts of beam clamps. Furnish, locate and set such inserts and make sure that such inserts are in place when the concrete is poured. Construct inserts of malleable iron or pressed steel with space for rods of all sizes. Install all inserts for pipes 3" and larger in size with a reinforcing rod 5/8" in diameter, run through a slot in the insert specifically provided for this purpose.

D. If any pipe has to be hung in spaces where no inserts have been provided, drill holes in the slab and provide rods and hanger attached to an approval fishplate or install 2 Star No. 7000 double expansion shields connected by a 2" x 2" angle, from which suspended the hanger rod. For pipe size 2" and under use single No. 7000 shields, but the hanger spacing defined herein before reduced to 5'-0". The carrying capacity and size of each shield to be calculated on the basis of the spacing indicated above the minimum size to be 3/8". Install additional shields of the same size so that the number of hangers are of adequate size to support the loads which they carry. Shields may be used in concrete slabs only.

E. Regardless of the type of construction (i.e., concrete, concrete-deck-steel or other variations) take particular care to support all main lines and all large and heavy pipes in an approved manner, including the furnishing and installation of supplementary steel, if required. Submit shop drawings, indicating support methods, point loadings to the building structure and hanger locations for review sufficiently in advance of concrete pouring schedules to permit evaluation, critique and any necessary changes to handling and support methods.

F. Set all inserts for all pipes in ample time to allow concrete work to be performed on scheduled time.

G. Hangers may be directly bolted to steel beams of building construction, where they occur. Smaller pipes may be suspended from cross-pieces of pipe or steel angles, which in turn, to be securely fastened to building beams or hung from building concrete construction by means of rods and inserts. The intention is to provide supports which, in each case, shall be amply strong and rigid for the load, but which will not weaken or unduly stress the building construction.

H. Provide approved roller support, floor stands, wall brackets, etc. for all lines running near the floor or near walls, which can be properly supported or suspended by the floors or walls, which can be near walls may also be hung by hangers carried from approved wall brackets to a higher level than the pipe.

I. Do not hang piping from other piping. Support of hangers by means of vertical expansion bolts is not permitted.

J. Whenever hangers using pipe rolls are used provide approved steel pipe covering protection saddles, spot welded to the piping at each hanger location.

K. Anchor piping where required to localize expansion or to prevent undue strain on piping and branches. Anchors to be entirely separate from hangers and of heavy forged or welded construction of approved design. All anchor designs, when submitted for approval, to include piping reactions which respective anchors are capable of supporting. Provide all indicated or required expansion loops.

L. Support all line of copper tubing individually by approved type hangers not more than 6' apart, or as shown on the drawings. Hangers for Uncovered Tubing: Broad straps fitting outside of covering.

M. Hangers for cold piping to support the pipe without piercing the insulation. Use insulation shields to protect the insulation on cold pipes. Weld insulation protection saddles to insulated hot pipes at roller supports. Wherever fibrous glass pipe insulation is installed, install calcium silicate of equal thickness in lieu thereof wherever hangers and insulation shields shall bear only on an insulation material which is of such density that it will not compress, crush or deform.

N. This Contractor may coordinate with other Contractors to use common means of support. Submit for approval all pertinent design data relating to the support as well as verification of the responsibility for the support.

O. Support vertical water piping at approximately the mid-height of the riser (unless otherwise indicated) using a clamp, installed so that expansion an contraction dos not cause trapping of air or prevent drainage.

P. For piping 4" and larger, support the elbows of the piping adjacent to the pumps with steel supports from the floor, and from the inertia base where pump is on such a base, to prevent loading heavy weights of piping on pump casings.

Q. Trapeze type hangers shall be made up of angles bolted back-to-back or channels for supporting parallel lines of piping. Trapeze type hangers shall be supported with suspension rods having double nuts, and securely attached to construction with inserts, beam clamps, steel fishplates cantilever brackets, lag screws of other approved means. Use approved type brackets for supporting piping attached along walls. Non-insulated piping (compressed air, gas, etc.) supported by trapeze hangers shall be provided with hold down clamps at the trapeze hangers. If non-ferrous piping (copper, etc.) is supported on the trapeze hangers, the trapeze and hold down clamps shall be copper clad.

R. Maximum weights on hanger rods shall be such that stress in tension shall not exceed 9,000 psi, using root area of threaded portion. In no case shall hanger size be less than 3/8" for pipe up to 2", 1/2"for pipe 1- 1/2" to 3- 1/2", 5/8" for pipe 4" to 5", 3/4" for pipe 6", 7/8" for pipe 8" to 12".

END OF SECTION

SECTION 22 05 53

IDENTIFICATION AND PAINTING FOR PLUMBING PIPING AND EQUIPMENT

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS
- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED
- A. Paint apparatus, equipment, piping, coverings, hangers, supports, and foundations, except otherwise specified. For performing this work, employ an experienced subcontractor specializing in painting work and approved by the Commissioner.
- B. Where a priming coat or other painting is specified under other sections of the specification, such coat shall not be considered as one of the coats of paint specified in this section.
- C. Piping and covering concealed in hung ceilings, in furred-out spaces and inaccessible locations are not required to be painted at the site. However, piping, insulation facing, etc., located in accessible spaces in basement, pipe space, crawl space or cellar shall be painted as specified. Piping in trenches and piping laid in the ground shall also be painted as specified.

1.03 RELATED WORK
- A. Hangers and Supports for Plumbing Piping and Equipment - Section 22 05 29
- B. Pipe, Tube and Fittings - Section 22 10 00
- C. General-Duty Valves for Plumbing Piping - Section 22 05 23
- D. Plumbing Insulation - Section 22 07 00
- E. Plumbing Equipment, Specialties And Accessories - Section 22 30 00.

1.04 QUALITY ASSURANCE
- A. New York City Building Code.
- B. ASTM
- C. Federal Specifications

1.05 SUBMITTALS
- A. Paint samples, if requested.
- B. Color chips.

1.06 DELIVERY, STORAGE AND HANDLING
- A. Painting materials: Store only in assigned spaces and maintain in a clean condition, safe from fire hazards. Comply with regulations of the Fire Department. The floors of assigned spaces shall be protected from paint damage by use of drop cloths or building paper. Remove waste material such as oily rags, and empty paint cans from site each night. Provide commissioner with one (1) key for each of these spaces if locked.

PART 2.00 - PRODUCTS

2.01 PAINTING MATERIALS

A. Factory mixed and delivered to the premises in original sealed containers, with unbroken seals. Containers shall bear the name and trade brand of the manufacturer and must indicate compliance with Federal Specifications, as noted below. Materials shall be approved by the Commissioner before they are used. Before beginning the painting work submit an affidavit to the Commissioner stating that all materials proposed comply with this specification.

B. Materials shall comply with the requirements of Federal Specification TT sections as follows:

Aluminum Paint (ready mixed)	P-0038c
Asphaltum Paint	V-51c
Black Paint	P-61d
Colors in Oil	P-381c(2)
Enamel Undercoat	E-543a
Galvanized Iron Primer	P-6411f
Gloss Enamel	E-489f
Iron (Red) Oxide	P-31c
Latex Base Paint	P-29h
Lead, Zinc and Titanium Paint	P-102b
Turpentine	T-801c
Zinc Chromate Primer	P-636b

PART 3.00 - EXECUTION

3.01 WORKMANSHIP

A. Paints shall be applied in a careful manner by painters experienced and skilled in their trade. Materials or work to which paint is to be applied, whether in factory, in ship, or at the site, shall be properly prepared to receive the same. The surfaces shall be dry, free from foreign matter, dirt, cement, plaster, grease, oil, loose paint, scale, scratches, finger marks, and pencil marks. The various surfaces shall be sandpapered or rubbed before and between coats as required to produce a satisfactory surface. No paint shall be applied until the preceding coating is thoroughly dry. Paint shall be evenly spread and well brushed out. It shall be so applied as to eliminate drops, runs or sagging of materials. Enamel shall be evenly and smoothly flowed on. Painting at the site shall not be commenced until ordered by the Commissioner.

B. Drop cloths shall be used to prevent drops of paint and oil from defacing the painted walls, woodwork, floors, stairs, convectors and furniture. Contractor shall be particularly careful not to get paint on nameplates, valve tags, and on other finished surfaces. Paint spots shall be properly removed from floors and finished surfaces.

C. Each separate application or coat of paint or enamel shall be left until it has been inspected and approved by the Commissioner before another coat is applied. Each coat of paint applied prior to finishing coat shall be of a shade different from preceding coat, as directed, and from final coat.

D. Where the finished surfaces of the building have become discolored, marred, damaged or otherwise destroyed in the performance of this Contract, the same shall be refinished, painted or varnished (as the case may be) in the best manner of such work and in every respect equal to the work previously existing.

3.02 PIPING IDENTIFICATION

A. All piping systems to be color coded by paint identifications.

B. Piping of each given layout first to be neatly painted with two coats of flat enamel in a buff color if existing paint is not satisfactory.

C. The identification scheme shall be as follows:

1. Pipes shall be identified by a 6" wide colored band located near strategic points such as valves, items of equipment, intersections, and with walls.

2. The colored band shall consist of a background color designating the major classification of the material carried by the pipe.

3. An arrow shall be stenciled on each colored band indicating the direction of flow through the pipe. This arrow shall be placed in such a location of the perimeter of the pipe as to be readily visible to operating personnel from the floor in the area. The arrow shall be black, approximately 3" long; 2" for the "shaft" and approximately 1" for the "head" formed by an equilateral triangle having a base equal to twice the width of the "shaft". The width of the "shaft" to be 1" (1/2" on pipes 3" or less in diameter).

D. Stencil a lettered legend in black to further identify the pipe contents. Lettering to be stenciled in the band on the lower quarters of horizontal piping. Size of letters to be 7/8".

E. For pipes smaller and 3/4" use tape bands or metal tags with lettering etched and filled with colored enamel to identify the pipe contents.

F. Comply with the requirements of the New York City Building Code.

G. Use the following scheme for the identification of piping systems:

Classification	Band Color	Stenciled Legend
Domestic Hot Water	Orange	Dom. Hot Water
Domestic Cold Water	Green	Dom. Cold Water
Domestic Hot Water Circulation	Orange	Dom. H. W. Circ.
Natural Gas	Yellow	Gas
Sanitary Drainage	Green	San.
Storm Drainage	Green	Storm
Fire Standpipe	Red	Standpipe

3.03 PAINTING FOR MASONRY FOUNDATIONS

A. Masonry foundations built by this Contractor shall be painted above the floor with two (2) coats of latex paint, color selected by Commissioner.

3.04 PAINTING FOR PUMPS, TANKS, AND EQUIPMENT.

A. Pumps, housings, motors, tanks, air compressors, air storage tanks, auxiliary appliances, and exposed metal supports and framework, furnished and installed under this contract shall be given a shop priming coat of rust-inhibiting paint standard with the manufacturer, and after all other work is finished, one (1) coat at the site with lead and oil paint, or color selected. If not factory painted housings made of aluminum or fiberglass shall not be painted. Equipment finish-painted at the factory may not be required to be painted over at the site, provided finish painting is not damaged and is in good condition at completion of project.

3.05 PAINTING FOR UNINSULATED PIPING

A. Except for finish brass piping, chrome plated piping and galvanized pipe which shall not be painted, exposed uninsulated piping, including hangers, installed by this Contractor throughout the building, shall be cleaned and then given one (1) coat of primer and one (1) coat of enamel, color as required.

B. Exposed pneumatic valves and air piping in finished rooms in and above basement or cellar shall be painted. Conduit or troughing enclosing pneumatic tubing shall not be painted.

C. Piping in floor trenches within the building shall be painted after fabrication with one (1) coat of black asphaltum paint.

D. Piping buried in the ground including the underground piping for oil storage tanks shall be protected with one (1) coat of black asphaltum paint.

E. All exterior, underground, natural gas piping and fittings shall be coated with Hill-Hubbell Spec. BAX-1 pipe covering or approved equal. Buried tees or elbows shall be similar to pipe. All underground piping shall be mill-wrapped.

END OF SECTION

SECTION 22 05 77

PLUMBING SYSTEM TESTS

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to provide Plumbing System Testing as shown on the drawings and as specified herein.

1.03 RELATED WORK

A.	General Requirements for Plumbing Work	-Section 220500
B.	Pipe, Tube and Fittings	-Section 221000
C.	Drainage Systems	-Section 221100
D.	Water Supply Systems	-Section 221100
E.	Natural Gas System	-Section 231000

1.04 QUALITY ASSURANCE

A. Plumbing Code
B. N.F.P.A. - National Fire Protection Association
C. A.G.A. - American Gas Association
D. C.G.A. - Compressed Gas Association

1.05 SUBMITTALS

A. Certification.

1.06 SPECIFIC REQUIREMENTS

A. All tests shall be made in the presence of the Commissioner, or their representatives, and the local authorities having jurisdiction of the work to be tested, as may be directed; and at least 72 hours notice shall be given in advance of all tests.
B. The Work of this Contractor shall include the furnishing of all testing instruments, gauges, pumps, smoke machines, and other equipment required or necessary for tests, required by laws, rules and regulations and as specified.
C. Provide all other tests required by local inspectors and all other authorities having jurisdiction.
D. All appurtenances shall be operated after installation to determine whether or not they meet the requirements of the Specifications.
E. All defects disclosed in the work by tests and otherwise shall be made good or the Work replaced without additional cost to the Commissioner. No caulking on screwed joint, cracks or holes will be acceptable.
F. Tests shall be repeated after any defects disclosed thereby have been made good or the work replaced if it is deemed necessary.
G. All tests shall be made at the expense of the Contractor.
H. Tests are not permitted to be made with air except as noted.
I. Contractor to provide required test plug tee fittings during erection of pipe system.

J. If the pipe, installation fails to meet testing requirements, the Contractor shall determine at his own expense the source or sources of leakage, and he shall repair or replace all defective materials or workmanship. The completed pipe installation shall meet the requirements of the tests after the leaks have been corrected.

K. All piping which is to be enclosed in partitions or hung ceilings shall be tested and made tight when directed by the Construction Supervisor and in adequate time to permit the installation of partitions and ceilings. When necessary, the Contractor shall drain the piping and/or take such precautions as required to prevent damage by freezing.

L. The Contractor shall also be responsible for the work of other trades that may be damaged or disturbed by the tests, or the repair or replacement of this Work, and he shall, without extra charges, restore to its original condition, any Work so damaged or disturbed.

M. The Contractor shall be responsible for all tests listed in this Section as well as all Special Tests and Inspections in Section 220577.

PART 2.00 - PRODUCTS

NOT APPLICABLE.

PART 3.00 - EXECUTION

3.01 WORK PERFORMED PRIOR TO TESTING

A. Water Systems:
   1. Flushed, filled and vented.
   2. Correct pump rotation.
   3. Proper strainer baskets clean and in place.
   4. Temporary start-up strainer baskets removed.
   5. Service and balance valves open.

3.02 BALANCING

A. Balance and adjust water systems.
   1. Examine system and position valves and cocks in their required open or closed position.
   2. Make all adjustments as required to balance system and equipment.

B. Mark valve tag of each valve or cock used for balancing to indicate position of valve stem.

C. Make repairs to all leaks or defects without additional cost to the Commissioner.

3.03 FINAL WATER SYSTEM BALANCING

A. Provide final balancing and adjustments to water systems after Contractor corrects all deficiencies. Final balancing shall incorporate all Commissioner comments on Preliminary Balancing Report.

1. Make all final adjustments as required to balance system and equipment. Submit report indicating final GPM to all risers and equipment. Report shall indicate final performance characteristics for pumps including total GPM, total dynamic head and actual motor amps.

B. Mark valve tag of each valve or cock used for balancing to indicate position of valve stem.

3.04 TESTING OF AUTOMATIC CONTROLS

A. In cooperation with the control manufacturer's representative, adjust controls to operate as specified. Testing personnel shall check all controls for proper calibrations and list all controls requiring adjustment by control installers.

3.05 DOMESTIC WATER SYSTEM STERILIZATION

A. The potable water system shall be disinfected prior to use. Samples shall be taken as required by the department of health. The method to be followed shall be that as prescribed by the Department of Health, by the following:

1. The pipe system shall be flushed with clean, potable water until not dirty water appears at the outlets.
2. The system or part thereof shall be filled with a water-chlorine solution containing at least 50 parts per million of chlorine and the system or part thereof shall be valved off and allowed to stand for 24 hours or, the system or part thereof shall be filled with a water-chlorine solution containing at least 200 parts per million of chlorine and allow to stand for 3 hours.
3. Following the prescribed standing time, the system shall be flushed with clean potable water until no excess chlorine remains in the water coming from the system.
4. The procedure shall be repeated if it is shown that contamination still persists in the system.
5. Certify through an independent testing laboratory the quality of purity. Submit test results to Commissioner.

3.06 PIPING SYSTEM TESTS - GENERAL

A. Each piping system shall be tested prior to application of insulation, painting or placing of backfill. Testing as stipulated herein shall be considered minimum, and where tests stipulated by lawfully jurisdictional authorities exceed these requirements, such more stringent tests shall be performed.

B. All materials and equipment for testing shall be furnished by the installer of the system. Concealed work shall remain uncovered until required tests have been completed. In the event that the project construction schedule requires it, make arrangements and insert proper sectionalizing devices so that a portion of a system may be tested.

C. All piping, unless otherwise specified, shall be tested to a hydrostatic pressure at least 2- ½ times the maximum designed working pressure (but not less than 50 psig) for a sufficiently long time to detect all leaks and defects, and after testing, shall be made tight in the most approved manner.

D. Where controls and accessories are not designed to withstand pipe test pressures, they shall be properly protected against damage during such test.

E. Compressed air piping for temperature control line shall be subjected to an air pressure test of 50 psig and connections checked with soapsuds.

F. If in any tests leaks are observed, the defective work or material shall be replaced. No caulking of screw joints or holes will be acceptable. Repetition of the entire test will be required as many times as leaks can be observed from the tests, until no leaks result in successful completion of the test.

G. Make all provisions for removal of test equipment and draining of pipes after tests have been completed. Insulation work shall not be performed prior to inspection and testing of piping.

H. The Contractor shall inform the Commissioner in writing when a section of piping is to be tested and subsequently insulated or otherwise concealed. Such notice shall be given a minimum of five (5) working days prior to the start of testing.

I. Where possible, arrange to conduct tests under constant ambient temperature conditions in order that compensation for temperature change is not necessary.

3.07 SITE AND UNDERGROUND WATER PIPING

A. The new water main shall be give pressure and leakage tests in Section of approved length all as directed and approved by the Commissioner. Hydrostatic and leakage tests shall conform AWWA C600-64 requirements. For these tests, this Contractor shall furnish a water meter and a pressure gauge. This Contractor shall furnish and install suitable temporary testing plugs, valves or caps for the pipeline, all necessary pressure pumps, pipe connections, other similar equipment, and all labor required. All expenses involved in making leakage and pressure tests shall be borne by this Contractor. The meter gauge shall be installed by this Contractor in such a manner that all water entering the Section under test will be measured and the pressure in the Section indicated, and shall be kept in use during both tests. The Sections of pipe to be tested shall be filled with water of approved quantity and all air shall be expelled from the pipe.

B. The new water main shall be subject to a hydrostatic test of 200 psi gauge, after the pipe is laid and the trench partially backfilled (joints shall be left exposed). The test pressure shall be applied to each valved section and maintained for a period of two (2) hours with no more than 2 psi loss or pressure. If this Contractor cannot achieve the specified pressure and maintain it for a period of two (2) hours, the section under test shall be considered as having failed to pass the pressure test.

C. If the section tested shall fail to pass the pressure test or the leakage test, or both, this Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, joint, etc., without extra cost to the Commissioner.

D. If, in the judgment of the Commissioner, it is impractical to follow the foregoing procedures exactly for any reason, required modifications in procedure shall be made, but in any event, this Contractor shall be responsible for the ultimate tightness of the lines within the above leakage requirements.

3.08 INTERIOR DOMESTIC WATER SYSTEMS

A. Domestic cold, hot and hot water circulation system: The entire water supply system shall be tested to a hydrostatic pressure of 150 pounds per square inch or 1- ½ times the system pressure, whichever is greater, at lowest point of the water system in the building, and proved tight at this pressure before fixtures are installed. Water supply piping, if in any way concealed by structural work, shall be tested to the aforesaid pressure and proved tight before pipes are concealed.

B. The test procedure shall be held for a period of not less than two (2) hours. The piping system shall be considered tight if the drop in pressure does not exceed 2 pounds per square inch during the test period. If the pressure drop exceeds 2 pounds, all repairs and alternations in the pipe system necessary to meet the test shall be made.

3.09 DRAINAGE AND VENT PIPING INSIDE BUILDING:

A. Rough Plumbing: Except for outside leaders and perforated or open jointed drain title (subsoil drains), the piping of plumbing drainage and venting system shall be verified as to materials and shall be tested upon completion of the rough piping installation and proven to be watertight. The Commissioner may require the removal of any cleanout plugs to ascertain that the prescribed pressure has been reached in all parts of the system.

1. Water Test: A water test shall be applied to the drainage system either in its entirety or in sections after rough piping has been installed. If applied to the entire system, all openings in the piping, except the highest opening, shall be tightly closed and the system filled with water to the point of overflow. If the system is tested in section, each opening, except the highest opening of the sections under test, shall be tightly plugged and each section filled with water. No section shall be tested with less than a 10 ft. head of water. In testing successive sections, at least the upper 10 ft. of the following section shall be tested, so that no joint or pipe in the building (except the uppermost 10 ft. of the system) shall have been submitted to a test of less than 10 ft. head of water. The water shall be kept in the system or in the portion under the test for at least 15 minutes before inspection starts; the system shall then be tight at all points.

B. Finished Plumbing: After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be verified as to materials, and shall be tested and proven gastight by either a smoke test or a peppermint test.
   1. Smoke Test: The smoke test shall be made by filling all traps with water and the introducing into the entire system a pungent thick smoke produced by one or more smoke machines. When the smoke appears at stack openings of the roof, these openings shall be closed and a pressure equivalent to a 1" water column shall be maintained for the period of the inspection.
   2. Peppermint Test: The peppermint test shall be made by introducing 2 ounces of oil of peppermint into the roof vent terminal of every line or stack to be tested. The oil of peppermint shall be followed at once by 10 quarts of hot water (160 degrees F or higher), whereupon all roof vent terminals shall be sealed. The detection of the odor of peppermint at any trap or other point in the system shall determine the location of any leaks. Persons who have come in contact with oil of peppermint shall be excluded from the test area.

3.10 NATURAL GAS

A. Low Pressure for 10 minutes without drop:
   1. With approved mercury gauge:
      a. With air at 6" of mercury.

B. From service valve to meters, 90 P.S.I.G.

C. High Pressure - As per National Fuel Gas Code as modified by the N.Y.C. Building Code.

D. Purge all piping after pressure test.

E. Purge all equipment after piping has been purged.

F. Radiography shall be performed on all butt welds in gas meter and gas distribution piping operation at pressures exceeding 3 psig, within buildings, in accordance with API 1104-1977 or ASME Section IX Boiler and Pressure Vessel Code, 1980.

G. The Commissioner has the option of requiring the testing of welded joints in piping specified below to be performed by means of radiographic inspection. If welds are found to have been improperly made or excess materials has been extruded into the piping, additional radiographic inspections may be required from the Contractor and all or parts of the work may be rejected. The testing laboratory selected by the Contractor to perform this work shall be acceptable to the Commissioner.

H. Applications for payments for the radiographic inspection shall be made on separate blanks without regard for any other work. Each application shall include the certificate of the testing laboratory for each day that the testing laboratory performed testing of welded joints.

I. Radiographic inspections shall be performed on the following piping systems: Gas system as noted.

3.11 FIRE STANDPIPE/SPRINKLER SYSTEM

A. Before any paint is applied, the fire standpipe system shall be tested hydrostatically at not less than 200 psi pressure for two (2) hours minimum, and in accordance with all requirements of the authorities having jurisdiction and NFPA latest edition.

B. Before any paint is applied, the dry standpipe system shall be tested by air pressure to 40 psig for a period of 24 hours. Leakage in excess of 1- ½ psig will not be acceptable.

END OF SECTION

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SECTION 22 07 00

PLUMBING INSULATION

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS
A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to provide Insulation on Plumbing Piping and Equipment as shown on the drawings and as specified herein, including but not limited to the following:
1. Insulation, jacketing and adhesives for plumbing piping.
2. Insulation, jacketing and adhesives for plumbing equipment.

1.03 RELATED WORK
A. Pipe, Tube and Fittings - Section 221000.
B. Hangers and Supports for Plumbing Piping and Equipment - Section 220529.

1.04 QUALITY ASSURANCE
A. Federal Specifications - F.S.
B. Underwriters Laboratories - U.L.

1.05 SUBMITTALS
A. Shop Drawings:
1. Insulation Materials.
2. Jackets.
3. Adhesives.

PART 2.00 - PRODUCTS

2.01 INSULATING MATERIALS
A. All insulation shall have composite (insulation, jacket facing and adhesive used to adhere jacket or facing to the insulation) fire and smoke hazard ratings as tested by Procedure ASTM E-84, NFPA 255 and UL 73, not exceeding flame spread of 25, fuel contributed of 50, and smoke developed of 50. Accessories such as adhesives, mastics, cements, tapes and cloths for fittings shall have component ratings as listed above. Insulation shall be glass fiber with a maximum K factor of 0.23 at 75 degrees F. mean temperature. Density shall not be less than 3 lbs. per cu. ft.
B. Insulation thickness shall conform to application schedule specified herein for types and thickness.
C. Pipes subject to freezing: Cover all piping subject to freezing with an additional layer of 2" glass fiber insulation of the same finish as specified for the particular service when not subject to freezing, but not less than 3" total thickness.

D. The materials as specified below have been selected from Owens-Corning Fiberglass Corp. and are representative of the quality, design and finish desired. Insulation as manufactured by other manufacturers may be submitted for approval, provided the products meet fully in all respects (such as density, moisture absorption, alkalinity, thermal-conductivity, jacket, etc.) to the materials as delineated below.

E. Fiberglass Pipe Insulation: FS HH-1-558B (Amend. 3), Form D, Type III, Class as indicated. Provide Class 12 for hot and cold plumbing piping.

F. Fiberglass Pipe Fitting Insulation: FS HH-I-558, Form E, Class as indicated. Provide Class 16 for use with Class 12 pipe insulation, where temperature does not exceed 450 degrees F.

G. Flexible Unicellular Pipe Insulation: FS HH-I-523, Class T.

H. Calcium Silicate Pipe Insulation: FS HH-I-523, Type II, except type I where needed, factory applied jacket Class B.

I. Vapor Barrier Materials: FS HH-B-100B, Type I, paper-backed aluminum foil, except as otherwise indicated, strength and permeability rating equivalent to adjoining pipe insulation jacketing.

J. Bends shall be 0.016 inch thick, 1/2" aluminum spaced 18" on center, finish cement shall be J-M No. 375 or smooth coat by Insulation Industries, Inc.

K. Wires shall be 20 gauge galvanized annealed steel, sealer shall be layer of J-M duramesh 207 or approved equal.

L. Adhesives and Protection Finish shall be Benjamin Foster 30-36 or Insul-Coustic (I-C).

M. Jacketing Material for Equipment Insulation: Provide pre-sized glass cloth or canvas material, not less than 7.8 ounces per square yard.

N. Fitting and Valves: Zeston 25/50 rated - 20 mil. P.V.C. covers over fiberglass insulation.

O. Weatherproofing finishes for outdoor insulation (Glycol).

1. Outside Piping

   a. Finish with a 0.16" thick aluminum jacket which has a factory applied moisture barrier. For all applications where it is available, the jacketing shall be factory attached to the insulation and installed per manufacturers' recommendation.

   b. Where field applied jacketing must be used, it shall be applied with 2" overlap facing down from the weather and shall be secured with an aluminum band (1/2" x 0.020") and seals applied on 12" center with bands applied directly over butt overlaps.

   c. Fittings and valves shall be insulated and finished with mitered sections of the insulation with factory attached aluminum jackets installed per manufacturers' recommendation.

2.02 RELATED MATERIAL AND REQUIREMENTS

A. At pipe supports Insul-Shield pipe saddles and matching hanger shall be used. Joints of insulation abutting Insul-Shielding pipe saddles shall be butted with IC-405, and the joints firmly pressed together.

B. All concealed and exposed piping shall be provided with factory ASJ (Owens/Corning Fiberglass) secured in place with vapor barrier adhesive IC-225. Provide 1/2" aluminum bands spaced 18" on centers.

2.03 INSULATION REQUIREMENTS

A. Water Piping

1. 1" insulation, A.S. jacket.
2. Frostproofed Piping 3" insulation, dual temperature fire retardant jacket.
3. Except as noted insulate all exposed and concealed vertical and horizontal domestic water piping, and all exposed and concealed horizontal storm drainage piping.

B. Miscellaneous Equipment

1. Insulate water meter with 4 pound density 1" thick vapor barrier glass insulation blanket, fitted and contour to shape and secured in place with bends or wire. Apply two coats of mineral wool, cement and trowel to a smooth finish, and finish with two applications of Benjamin Foster 30-36 vapor barrier finish.
2. Hydro-pneumatic tank: 1" thick glass fiber vapor seal board, type 705 faced with FRK jacket 4lb. density, with 1/2" thick finish over vaporseal mastic and finished cement copper-clad hexagonal wire. Domestic hot water generators shall be insulated with Weben Jarco or approved equal "Zip-A-Therm" jacket. Jacket shall have an R-11 thermal rating and conform to ASHRAE standard 90-75. Jacket shall limit heat loss to 13.61 BTU per square foot of tank surface at 130 degrees stored water temperature and 63 degrees F. ambient air temperature.
3. Insulate domestic hot water storage tanks with 4.2 pound density 2" thick vapor barrier glass insulation blanket, fitted and contour to shape and secured in place with bends of wire. Apply two coasts of mineral wool cement and trowel to a smooth finish, and finish with two applications of Benjamin Foster 30-36 vapor barrier finish.

C. Except as noted insulate all exposed and concealed vertical and horizontal domestic water piping, and all exposed and concealed horizontal storm drainage piping.

PART 3.00 - EXECUTION

3.01 GENERAL

A. Maintain integrity of vapor-barrier jackets on pipe insulation, and protect to prevent puncture or other damage. Staples shall not be used on vapor barrier.

B. Cover valves, flanges, fittings and similar items in each piping system with equivalent thickness and composition of insulation as applied to adjoining pipe run. Install factory, precut or job fabricated units (at Installer's option) except where a specific form or type is indicated.

C. Extend piping insulation without interruption through walls, floors and similar piping penetrations, except where otherwise indicated.

D. Do not apply insulation to hot equipment.

E. Apply insulation using the staggered joint method for both single and double layer construction, where feasible. Apply each layer of insulation separately.

F. Coat insulated surfaces of equipment with layer of insulating cement, troweled in a workmanlike manner, leaving a smooth continuous surface. Fill in scored block, seams, chopped edges and depressions, and cover wire netting and joints with cement of sufficient thickness to remove surface irregularities.

G. Cover insulated equipment surface with jacketing neatly fitted and firmly secured. Lap seams at least two inches. Apply cover vapor barrier where applicable.

H. All horizontal storm drainage piping under roofs, exposed and above hung ceiling, and roof drain bodies shall be insulated as specified for cold water piping, but nested larger diameter covering over hubs and drain bodies.

3.02 INSTALLATION REQUIREMENTS

A. Install insulation products in accordance with the manufacturer's written instructions, and in accordance with recognized industry practices to ensure that the insulation serves its intended purpose.

B. Install insulation on pipe systems subsequent to testing and acceptance of tests.

C. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with a single cut piece to complete the run. Do not cut pieces of scraps abutting each other.

D. Clean and dry pipe surfaces prior to insulating. Butt insulation joints firmly together to ensure a complete and tight fit over surfaces to be covered.

E. The Contractor shall take every precaution necessary to insure that the covering material is in satisfactory condition to receive painting.

F. Penetration of walls and floors by piping connection to rotating equipment shall be provided with a fiberglass sleeve, the full depth of pipe penetration.

G. In all cases where new piping connects to existing piping that is insulated, the existing insulation that is removed to make the new connection shall be replaced with new insulation as hereinafter specified.

H. Do not insulate hand holes, cleanouts, ASME stamp, and manufacturer's nameplate. Provide neatly finished beveled edge at interruptions of insulation.

I. Replace damaged insulation, which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture-saturated units.

J. The installer of the piping insulation shall advise this Contractor of required protection for the insulation work during the remainder of the construction period to avoid damage and deterioration.

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SECTION 22 10 00

PIPE, TUBE AND FITTINGS

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this Specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to complete the installation of pipe, tube and fittings as shown on the drawings and as shown on the drawings and as specified herein, including but not limited to the following:
   1. Atmospheric pipe systems.
   2. Pressure pipe systems.

1.03 RELATED WORK

A. Common Work Results for Plumbing- Section 22 05 00.
B. Identification and Painting for Plumbing Piping and Equipment - Section 22 05 53
C. General-Duty Valves for Plumbing Piping- Section 22 05 23
D. Plumbing Insulation - Section 22 07 00
E. Hangers and Supports for Plumbing Piping and Equipment - Section 22 05 29
F. Facility Sanitary Sewerage - Section 22 13 00
G. Facility Water Distribution - Section 22 11 00
H. Facility Fuel System - Section 23 10 00
I. Fire Standpipe System - Section 21 12 00
J. Plumbing System Tests- Section 22 05 77
K. Automatic Sprinkler Systems - Section 21 13 00

1.04 QUALITY ASSURANCE

A.

A.G.A.	American Gas Association
A.N.S.I.	American National Standards Institute
A.S.A.	American Standards Association
A.S.T.M.	American Society of Testing and Materials
A.W.S.	American Welding Society
A.W.W.A.	American Water Works Association
C.A.B.R.A.	Copper and Brass Research Association
C.I.S.P.I.	Cast Iron Soil Pipe Institute
F.S.	Federal Specifications - U.S. Dept. of Commerce
F.M.	Factory Manual
I.R.I.	Industrial Risk Insurers
N.B.S.	National Bureau of Standards
N.F.P.A.	National Fire Protection Associations
O.S.H.A.	Occupational Safety and Health Act
U.L.	Underwriters Laboratories

B. No welder shall be employed who has not been fully qualified and certified by an approved, nationally certified, welding bureau or similar recognized testing agency.

C. The competent and experienced welders who have qualified shall be retained at the job at all times when welding is done. Once qualified, they shall not be removed from the job. Each welder shall be in possession of a stamp to identify work performed by him.

D. Welding material and labor shall be in accordance with the welding procedures of ANSI piping codes. Mark of welder shall be stamped on each welded joint of pipe.

1.05 SUBMITTALS

A. Shop drawings indicating pipe layout (3/8" scale), sizes, types of materials, details, attachment and installation. Coordinate the work with other trades doing sheet metal work, electrical work and general construction.

B. Product Data: Manufacturers' printed data, catalog cuts, recommended connections and installation methods. Submit for valves, fittings, strainers, supports, sleeves, anchors and guides.

C. Samples, when requested.

D. Manufacturer's test data.

E. Reports of pipe field hydrostatic test.

1.06 DELIVERY, STORAGE & HANDLING

A. Deliver materials properly identified as to type, size, manufacturer's name, specification code, etc., and undamaged.

B. Do not store exposed to weather; cover with suitable type material to protect from damage.

C. 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 pipe from pre-installation contamination, all piping shall be shipped to job site with suitable caps, sheet metal covers or plugs. Pipe caps, etc. shall not be removed until just before installation.

D. Cap or plug all openings in pipe and pipe fittings during installation.

E. During loading, transporting and unloading, use care to prevent injury to pipes and pipe fittings. Do not drop pipe or fittings. Examine all pipe and fittings before laying. Do not install any piece that is found to be defective.

F. Store and protect all materials from injury prior to installation. Do not store any materials directly on the ground or floor. Keep materials as clean and dry as possible and free from damage or deteriorating elements.

G. Remove and replace with new pipe any defective pipe and pipe fittings discovered after installation without additional expense to the Commissioner.

PART 2.00 - PRODUCTS

2.01 BASE BID MANUFACTURERS

A. Pipe:

1. Cast Iron Drainage: Eastern Foundry, Tyler Pipe, U.S. Pipe and Foundry, Central Foundry Company, Charlotte Pipe and Foundry Company.
2. Ductile Iron: U.S. Pipe and Foundry, Clow Corporation.
3. Copper: Revere Copper Products, NIBCO.
4. Fittings for Brass Pipe and Copper Tubing: Flagg, Nibco.
5. Stainless Steel: Babcock & Wilcox, Carpenter Technology, Republic Steel.
6. Acid Waste: Duriron Co., Inc., Corning Glass Works, GSR-Fuseal.
7. Steel: Youngstown, Republic, U.S. Steel.
8. Flexible connectors: Flexonics, Resistoflex, Flexico.
9. Mechanical Fittings: Victaulic, Grinnell, MG Piping Products.
10. Sleeves: Thunderline Link-Seal.
11. Porous Concrete: Walker Poroswall.
12. Concrete: International Pipe & Ceramic Corp., Interpace Corp.

2.02 UNDERGROUND PIPE AND FITTINGS

A. Domestic Water and Fire Protection Systems:

1. 3" and larger
   a. Ductile iron pipe with mechanical joints conforming to A.S.T.M.A21.51 and A21.52 (AWWA/C151-65 60-42-10), and shall be approved by the local Water Company.
   b. Each pipe shall have cast on it or stamped on it by means of a hand dye stamp, the maker's name or mark, and the year in which the pipe is cast. The weight and thickness class shall be painted on each pipe.
   c. Lined with cement mortar in accordance with the A.S.T.M. A21.4-1964. Coated outside with an approved bituminous material. The coating of the interior shall conform with the requirements of A.S.T.M. A21.4-1964. All fittings shall be cement-lined mechanical joint type, Class 250, short pattern ASA 21.10-1964 AWAC-110-64. Fittings: Lined and coated as specified for cast iron pipe above. Assembly of the mechanical joint pipe and fitting shall be completed with a torque switch.
   d. PVC pipe, class 150, bell ends with gasket, AWWA C900.
      1) IPEX "Blue Brute"
      2) Fittings: AWWA C907, class 150, gasketted.

B. Domestic Water Systems:
1. 2 1/2" and smaller
a. Type "K" copper tubing and fittings, seamless hard drawn with silver brazed or compression joints and fittings in accordance with latest ASTM Standards and shall be either coated or mill-wrapped.
b. Flexible Polyethylene tubing, NSF approved, AWWA C-901, 200 psi rated, potable water grade.
1) Crestline HD CTB.
2) Fittings: Compression type similar to Mueller

C. Gas System:
1. Meet local Gas Company requirements or, as a minimum, shall be extra heavy, plain end, black steel pipe conforming to ASTM standard sizes and weights, and coated with Hill-Hubbell Spec. BAX-1 pipe covering or approved equal. Pipe 4 inches in size and larger shall be lap-welded. Buried tees or elbows shall be of extra heavy black steel with welded joints and coated similar to pipe. All pipes shall meet latest ASTM A53-47, A120-47, A135-46, and A139-46. All joints in underground piping shall be welded by an AWS certified welder. Dresser type connections in exposed locations are permitted at drip pots and valve. All underground piping shall be mill-wrapped.

2.03 INTERIOR PIPE AND FITTINGS
A. Sanitary, Vent and Storm Drainage Systems:
1. See Section 221300.

B. Domestic Water System:
1. Underground: 2" and smaller shall be Type "K" copper tubing, soft temper ASTM B-88 with wrought copper or cast brass brazed fittings, minimum 125 psi WWP. Brazing joints shall be as specified for domestic water piping. Pipe and fittings: Shall be asphaltum coated.
2. Domestic cold and hot water piping: Seamless drawn or extruded copper tubing type "L" hard temper ASTM B-88. Fittings: Wrought copper or cast bronze, brazing or grooved type. Joints shall be:
a. Brazed: Made with a brazing alloy (95/5) consisting of copper, silver and phosphorus, and shall conform to Handy Harmon "Silphos" fluxless brazing (1,300 degrees F.) or approved equal. Brazing material shall meet ANSI/AWS A5.8 Specifications.
3. Above ground domestic water piping: Seamless drawn or extruded copper tubing type "L" hard temper ASTM B 88. Fittings 1 ½" and smaller: Wrought copper or cast bronze, brazing type. Joints shall be made with a brazing alloy (95/5) consisting of copper, silver and phosphorus, and shall conform to Handy Harmon "Silphos" fluxless brazing (1,300 degrees F.) or approved equal. Brazing material shall meet ANSI/AWS A5.8 Specifications. Fittings 2" and larger: wrought or cast Victaulic type CTS grooved cooper fittings. Couplings: Victaulic style 606 ductile iron couplings, 300psi wwp.
a. See also Section 221100.

C. Fire standpipe system piping shall be suitable for working pressures in accordance with the following table:

1. Pipe, Fitting and Valve Pressure Ratings:

	Else Where *			New York City *			
Height from top of System	System Press PSI	wwp Fittings PSI	wwp Valves PSI	Sched. Pipe	wwp Fittings PSI	wwp Valves PSI	Sched. Pipe
0'-115' (4") (6")	165 155	STD MI300 C1175	175	40	350 CI, MI	150 (175)	40
116'-270'	230	STD MI300	400	40	350 CI, MI	250 (400)	40
271'-425'	300	XH MI800	500	40	350 CI, MI	350 (500)	40**
426'-657'	415	EXH MI800	Class 300 (720)	40	500 CI, MI	500	40
658'-1112'	526	Class 400	Class 400 (960)	80	800 CI, MI	800	80

* Unless otherwise required by Code, 300 psi wwp "Victaulic" ductile iron fittings and couplings may be used.
**Use Schedule 80 for over 300 psi.

D. Above Ground:
1. Hubless, Standard Weight, cast iron soil pipe and fittings or galvanized steel pipe with threaded galvanized cast iron recessed drainage fittings, with galvanized malleable beaded fittings for vent piping.

E. Subject to local approval, the option is permitted to use roll grooved or cut grooved end pipe with mechanical type joints for the fire standpipe systems and the galvanized steel, and the hard drawn copper tubing water pipe. State in bid materials that are to be provided.
1. For galvanized pipe use galvanized couplings.
2. For copper tubing use copper colored enamel coated ductile iron couplings.

F. Gas piping shall meet the local Gas Company guidelines or shall be as follows:
1. Black steel, Schedule 40 with maker's name rolled in the metal. Pipe three inches in diameter and larger shall be seamless.
2. Interior gas steel piping three inches and larger shall be welded; pipe 2- 1/2" and smaller provide 150 pound malleable iron threaded fittings.
3. All shoulder nipples shall be made of extra heavy pipe, no close nipples shall be accepted.

G. All screwed couplings and shoulder nipples not exceeding 5" in length shall be of the same material as the pipe but of dimensions conforming to Schedule 80.

H. All fittings used at expansion loops or bends shall be of 250 lb. WSP Class.

I. Welding fittings shall be of the same material and schedule as the pipe to which they are welded. Welding elbows shall be long radius pattern unless clearance conditions necessitate the use of standard radius pattern. Welded tees shall be used where difference between main and branch are two (2) standard pipe sizes or less. Branch connections shall be reinforced with Weldolets by Bonney Forge and Tool Works or welding saddles by Tube-Turn, Walworth or approved equal. Welding fittings shall be Tube-Turn, Walworth or approved equal.

J. Unions 2" and smaller shall be screwed unless otherwise noted. Unions 2- 1/2" and larger shall be flanged. If mechanical joint grooved couplings are used, unions are not required. (Couplings shall serve as unions.) Screwed unions on wrought iron and steel pipe, unless otherwise specified, shall be of malleable iron with bronze ground seats suitable for 300 lbs. WSP. Screwed unions or brass pipe shall be brass, ground joint suitable for 300 lbs. WSP. Flanged unions shall be malleable iron, gasket type suitable for 150 lbs. WSP. Unions shall be as manufactured by Crane, Walworth or approved equal.

K. Flanges shall be of the same weight as the fittings and valves in each service category. Welding neck flanges shall be used with flanged equipment, etc., on welded lines. All flanges shall be drilled in conformance with ANSI B16.5, 125 lb. or 300 lb. standard steel. Welding flanges shall be of steel. Laps shall be machined on front, back and edge and loose flanges have face and bore machined. Screwed flanges shall be faced perpendicular to adjoining pipe.

1. Flange adapters for grooved end steel pipe shall be complete with pressure responsive synthetic rubber gaskets. Flange adapters shall be Class 150, Victaulic Style 741. Flange adapters for use with copper tube shall be Class 150, Victaulic Style 641.

L. Flange joints shall be faced true, packed and made up perfectly square and tight. Each flange joint shall be provided with best grade steel bolts with square forged heads and with cold-pressed semi-finished hexagon nuts. Bolts and nuts shall be dripped in a mixture of graphite and oil, just before installation. All threads shall be U.S. Standard Gaskets shall be one-piece ring type 1/16" thick full face, suitable for temperature, pressure and service of systems.

M. Dielectric Fitting: Dissimilar connections shall be made with an insulating dielectric material such as Teflon or neoprene between copper, brass or bronze and black steel pipe.

N. Fittings:
1. Cast iron threaded drainage: Recessed pattern, ANSI B-16.12.
2. Malleable iron: Threaded and banded, standard weight except as noted, ANSI B-16.3.
3. Cast iron threaded: Standard weight, except as noted, ANSI B-16.4.
4. Cast iron flanged fittings and flanges: Standard weight except as noted, ANSI B-16.1.
5. Ductile iron grooved: ASTM A-536.
6. Steel grooved: Forged steel or fabricated steel ASTM A-53.
7. Steel welding: Standard weight seamless steel, ANSI B-16.9 and ASTM A-234.
8. Steel flanges: ANSI B-16.5.
   a. ASTM A-181 Grade I up to 300 psi.
   b. ASTM A-105 Grade I, 400 psi and above.
9. Grooved end fittings for copper tubing: Wrought copper conforming to ASTM B-75, B-152, and ANSI B16.22 with copper tubing sized grooved ends designed to accept Victaulic couplings.
10. Flange adapters for grooved end pipe: Ductile iron ASTM A-536, with synthetic rubber pressure responsive gasket.
11. Couplings for grooved end pipe:
    a. For steel pipe: ASTM A-536 ductile iron housings, with synthetic rubber pressure responsive gasket. (Rigid type with angle-pattern bolt pads, or flexible type where required.)
    b. For copper tubing: ASTM A-536 ductile iron, with synthetic rubber pressure responsive gasket of a FlushSeal® design, and angle pattern bolt pads. Coupling housings coated with copper colored alkyd enamel. Couplings shall be copper tubing sized.

O. Unions:
1. Ground joint type.
2. Brass for brass pipe and copper tubing.
3. Galvanized malleable iron with brass seats for iron pipe.
4. If mechanical joint grooved couplings are used, unions are not required. (Couplings shall serve as unions.)

2.04 EXTERIOR WALL/PIPE PENETRATIONS

A. Underground pipe through wall penetrations shall be sealed with positive hydrostatic seals. The modular mechanical seals shall consist of interlocking rubber links shaped to continuously fill the annular space between the pipe and wall opening. The seals shall be "LINK SEALS" as manufactured by Thunderline Corporation of Wayne, Michigan or an approved equal. Caulking or other type of mastic sealants or lead or oakum joints are not acceptable. The Contractor shall determine the required inside diameter of each wall opening or sleeve to fit the pipe LINK SEAL. The LINK SEAL size and model shall be as recommended by the manufacturer's instructions.
1. Seal: Type "C".

2.05 SLEEVES

A. Make sleeves of galvanized steel pipe when they are located in concrete beams of concrete fireproofing, waterproofed floors or where subject to moisture.

B. In all other locations, sleeves shall be constructed of galvanized sheet steel with lock seam joint of following minimum gauges: 24 gauge for 2" and smaller; 22 gauge for 4" to 6" inclusive; 20 gauge for sizes over 6".

C. Sleeve flashing shall be 16-ounce soft sheet copper, or a 4-pound lead flashing.

2.06 ESCUTCHEONS

A. Escutcheons shall be one piece with set screw except where otherwise noted, constructed of the following material.
   1. White painted sheet brass or steel for pipes passing through white prefinished ceilings.
   2. Cast iron, deep cut type project above finished floor.
   3. Heavy, solid pattern steel or cast iron with set screw for all other piping.

B. Provide escutcheons on all pipes passing through floors, walls, partitions and ceilings where exposed to view in occupied areas. Also, provide escutcheons within custom or factory-fabricated cabinet enclosures.

C. At exposed finished walls: chrome plated.

2.07 AIR VENTS

A. At all points indicated on the drawings and whenever else required to assure the complete venting of all parts of the system, install automatic, float-operated air vents, Sarco No. 13-W, or approved equal capable of venting all air and at the same time preventing the escape of water. Provide valve on cock before each vent.
   1. Hoffman Specialty No. 78.

B. Each float-operated vent shall be provided with a suitable vent line carried to the nearest floor drain, slop sink or other approved point of discharge.

C. Access door shall be provided for installation by GC where access to vents is required.

D. At a minimum provide air vents at top of each domestic hot, cold and return riser and at every pump inlet and outlet.

2.08 EXPANSION AND BALL JOINTS

A. Expansion Joints of the Packed Slip Type:

1. Internally guided, piston ring type, with cast iron or fabricated carbon steel bodies and flanged connections. Slips: Polished, chromium plated, seamless steel, with positive stop to limit outward movement and prevent disengagement of the slip. Fit the integral end of the slip and replacement of the packing rings while the joint is installed in the line and under full operating pressure. Arrange the internal guide to prevent metal-to-metal sliding contract with the polished surface of the slip. Provide deep stuffing boxes furnished with close fitting, vent connection, nipple and valve in the body of the joint, between the piston rings and the stuffing box for use during servicing operations. Rate all joints for the traverse, the temperature rating, the pressure rating and the test pressure rating of the service.

B. Expansion Joints of the Bellows Type:

1. Hydraulically formed, packless, stainless steel bellows type, self-equalizing, internally guided, full bore size, fully enclosed with flanged connections. Expansion joint flange ratings to those required for the traverse, the temperature rating, the pressure rating and the test pressure rating of the service.

C. Expansion Joints of the Flexible Ball Type:

1. Install in strict accordance with manufacturer's instructions. Torque flange bolts on the ball joints at the factory for the required duty and furnish with seals on all flange bolts to prevent any unauthorized readjustment. Rate all joints for the traverse, the temperature rating, the pressure rating, the test pressure rating, offset and gasket type of the service.

D. Expansion joints shall be manufactured by ADSCO, Barko, Flexonics, or approved equal.

E. Expansion joints for grooved end steel pipe:

1. 2" Through 6": Packless, gasketed, slip-type expansion joint with grooved end telescoping body for installation with Victaulic Style 07 rigid couplings. Provides axial end movement to 3", designed for water services up to 230°F and working pressure to 350 psi. Victaulic Style 150 Mover®.

2. ¾" Through 24: Combination of short nipples and Victaulic Style 75 or 77 flexible couplings joined in tandem for increased expansion. Joint movement and expansion capabilities determined by number of couplings/nipples used in the joint. Pressure rating dependent on size and style of flexible couplings used. Victaulic Style 155.

2.09 DRIP PANS

A. 18 gauge galvanized sheet steel, reinforced, properly supported watertight with 1- 1/4" drain.

B. Provide under piping where impossible to route water or drainage piping to avoid passing over or within 5 feet of electrical apparatus and in rooms containing only electrical equipment.

C. Provide under all ground floor plumbing offsets and where indicated on plans.

D. Provide under all sanitary piping in commercial kitchen and where indicated on plans.

2.10 GALVANIZING

A. Hot process inside and outside of pipe with zinc coating, minimum 2 ounces per sq. ft.

1. In accordance with American Hot-Dip Galvanizers Associations.

2.11 CHROMIUM PLATING

A. In accordance with U.S. Government Standards under license from Chrome Corporation of America.

B. Clean material and polish before plating.

C. Plating: Heavy, evenly applied, guaranteed not strip or peel.

D. Brass or Copper Plating: Nickel plated before chromium plating, ASTM B-281, B-456.

E. Finish: Polished or satin as noted.

2.12 MISCELLANEOUS MATERIALS

A. Galvanized Sheet Steel: ASTM A525.

B. Cement: ASTM C-150.

C. Sand, Stone and Gravel for Concrete: ASTM C-33.

D. Sand for Mortar and Grout: ASTM C-144.

E. Reinforcing Rods: ASTM A-615.

F. Reinforcing Wire Mesh: ASTM A-185.

PART 3.00 - EXECUTION

3.01 INSTALLATION OF PIPING

A. General:

1. Piping: Installed in neat and workmanlike manner parallel to walls, column center lines but sloped to drain. Work of each trade shall be fully coordinated to provide the design systems without interference between systems. Piping shall be accurately cut, reamed and threaded with sharp dies. Install copper piping in accordance with best practices requiring accurately cut clean joints and soldered in accordance with the recommended practices for the materials and solder employed.

2. Piping shall be installed so as not to interfere with diffusers and electrical lightning outlets which must be accurately centered and located. Special attention shall be given to piping above ceilings, which must be kept a sufficient distance from the lighting outlet to permit later installations of the lighting fixtures and their reflectors fixtures, piping and equipment.

3. Arrange and install piping as indicated, straight, plumb and as direct as possible, form right angles on parallel lines with building walls. Keep pipe close to walls, partitions and ceilings, offset only where necessary to follow walls, as directed.
4. Locate groups of pipes parallel to each other and space them at a distance to permit access for servicing valves. Risers shall not have couplings in runs from one floor outlet to the next.
5. The installation of copper tubing shall be accomplished in such a way as to not touch or come in contact in any way with ferrous metals. Where copper tubing piping or fittings may come in contact with ferrous metal anchors, supports or construction, an insulating non-conductor spacer, similar to lead, rubber or an approved equal, shall be installed to assure prevention of electrolysis.
6. Piping size change shall be accomplished by reducing ell, reducing tee. Eccentric reduction shall be applied in all piping requiring continuous drainage such as steam, condensate and blow-down piping. Concentric increasers shall be used where flow is in direction of increased size. Provide eccentric reduction, top flat, at pump suction reductions.
7. All welding piping shall be butt welded at circumferential joints. Flanges shall be weld-neck type or slip-on type flanges. Materials and methods for each type and class of piping are generally specified for particular services in this specification.
8. Companion flanges or Victaulic couplings at equipment or valves match flanges construction of equipment or valve. Raised face shall be removed at companion flanges when attached to flanges equipped for flat face construction.
9. Gaskets and bolting shall be applied in accordance with the recommendations of the gasket manufacturer and bolting standards of the Code for Pressure Piping (ANSI B31.1.0-1967 par. 108, 135). Strains shall be evenly applied without overstress of bolts.
10. Screw threads (ANSI B31.1.0 par. 135.4) shall be made up with piping compound or other sealing method approved to assure tight joints without overrun of thread into fittings. Compounds shall be approved for service application.
11. Threaded pipe shall be carefully cut, reamed or filed out to size of bore removing all chips, worked into place without springing. Provide Teflon tape on the male thread only. Threaded joints when tight shall not expose more than two full threads.
12. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. All grooved couplings, fittings, valves, and specialties shall be the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.
13. Copper tubing shall be worked into place without springing.

14. Dielectric couplings or brass adaptors suitable for dielectric service shall be provided at pipe connections between steel or cast iron piping and copper piping.

B. Expansion Requirements:

1. All piping shall be installed throughout the project with due regard for expansion to prevent damage to the building, equipment and piping. Provide anchors, loops or approved type expansion joints where indicated or required for the accurate control of movement.
2. Branch connections to mains for risers shall be made with minimum of three 90 degree elbows.
3. Bullhead connections in any piping service are expressly prohibited.
4. Expansion pipe loops shall be supplemented with adequate guides as close to loops as possible to preserve alignment and pitch.
5. Securely support pipe anchors, constructed of steel angles and channels, required to keep pipe movement within area of expansion provision. Submit anchor details for approval before installation.
6. Provide adequate expansion allowance for service temperatures and piping materials.
7. When installing piping with loop or bend expansion, subject piping to cold spring, which will take care of about half of total expansion between hot and cold conditions. Make riser offsets in manner to avoid pocket forming due to expansion. Submit anchor details for approval before installation.
8. Expansion and contraction of grooved IPS steel piping systems shall be provided with loops or bends consisting of (8) Victaulic Style 75 or 77 flexible couplings, (4) grooved end 90 degree elbows, and grooved end pipe spools provided in water systems to 230°F in accordance with Victaulic recommendations for expansion compensation.

C. Concealed Piping:

1. Where so indicated or specified, piping shall be concealed in building construction. Install such piping in time so as not to cause delay to work of other trades, and allow ample time for tests and approval; do not cover before approval is obtained. Wherever possible, run branches passing through floor into partitions, offset above floor close to equipment and expose only as much as necessary for final connection.
2. Where furred spaces are indicated, keep pipes as close to structural members as possible so as to acquire minimum furring. In case of furred beans, obtain approval of resulting headroom clearance before installing pipes. This Contractor is cautioned to check clearances on General Construction Drawings.

3.02 SLEEVES

A. Provide sleeves for all pipes passing through floors, walls or partitions, hung or furred ceilings, etc. (of sufficient diameter to accommodate pipe covering where such is required). Set sleeves for concrete floors, walls and other masonry work in place before the floors or walls are poured or built and located and secured in place so that space all around the pipes, after the pipes are installed in place, are about equal.

B. Protect pipes passing through floors with membrane waterproofing and roofs with Schedule 40 pipe extensions (not sheet metal) and provide "Zurn Z-197" or "Josam 1880" with cast iron integral flashing flange and clamping ring waterproof type pipe sleeves. For membraned floors, fill void between sleeve and pipe with mineral wool and then seal the top with mastic to prevent sound transmission. Sleeves for Penetrations of the Metal Deck (where applicable): Nail, Cut or drill the metal deck after the deck is poured. Set sleeves in such a manner so that no concrete fills their interior during the concrete pouring and screening operations.

C. Sleeves for Reinforced Concrete Walls and in Concrete Beams: Standard weight galvanized steel pipe with anchor flanges. Sleeves through Toilet Rooms and any other such Wet Area Floors: Iron pipe size brass. Caulk floor sleeves for exposed pipes watertight and project approximately 2" above the finished floor so that the plate will properly fit over same. Finish sleeves flush with the bottom of slab and also with the finished faces of wall.

D. Provide sleeves with an inside diameter at least 1/2" greater than outside of pipe served, including pipe insulation which must be continuous through sleeve.

E. Use LINK-SEAL only for pipes and sleeves in exterior walls, foundation walls and pits. Where piping penetrates walls (other than foundation walls), partitions, floor slabs, etc., pack space between piping and sleeve with mineral wool.

F. Do not support pipes by resting clamps on sleeves. Clamps must extend beyond sleeve and be supported outboard of sleeve in an approved manner.

G. Provide escutcheon plates of the proper size for all piping in sleeves passing through walls, furrings, partitions, hung ceilings, etc. throughout

H. Provide counter-flashing for all piping passing through waterproof wall or roof construction consisting of steel rainhood welded all around to pipe and overlapping flashing.

I. Where space for future pipe and conduits is required, provide sleeves and fill with lightweight concrete.

Grouting around pipes and ducts through concrete slabs and walls, and masonry walls with Portland cement grout in the sleeved opening extending full depth through wall or floor slab, with sheet metal over the insulation before grouting in. Around pipes and ducts through drywall construction wrap mineral rope and finish with sheet metal collar on ducts and escutcheons on pipe. Attach escutcheons to wall, not pipe. Use at all fire-rated walls and floors.

3.03 WELDING

A. Welding Process: All welding shall be done by the oxyacetylene or electric arc welding process in accordance with the requirements set forth in Welding or Pipe Joints of the ASME Code for Pressure Piping.

B. Beveling and Welding: All steel pipe 2-1/2" and larger may be purchased mill beveled or shall be machine beveled on both ends before welding. On odd lengths of pipe, beveling may be accomplished by means of the oxyacetylene cutting torch providing all paint, rust, scale and oxide are carefully removed with hammer, chisel or file. Joints shall be prepared and welded to assure thorough fusion with bare metal, complete penetration, maintenance of alignment, and the production of a joint that shall develop the full strength of the pipe and shall develop the full strength of the pipe and shall be leak-proof in service.

C. Welding Rods: The welding rod used for welding shall be Oswald No. BT or approved equal.

D. All foreign matter shall be removed from the ends of pipe lengths before tacking and welding. Pipe lengths shall be lined up straight and abutting pipe ends shall be concentric. Spacing and tuck welding shall be such as to prevent the pipe form lapping or getting out of alignment during welding operation.

E. All welding shall be come in accordance with the latest accepted practice applicable to the particular service and shall be performed only by welders who have been tested and qualified in accordance with the requirements of the ACA Piping Code for Welding. The Contractor shall furnish a certificate for each welder, certifying that the welder complies with these Specifications and of the National Certified Pipe Welding Bureau.

F. Welders shall be licensed by New York City Department having jurisdiction to issue licenses.

G. The welding of high pressure piping shall be under Controlled Inspection as required by the Building Code.

3.04 STRAINERS

A. Provide approved self-cleaning strainers in inlet connections to each feeder and make-up connection, each automatic control valve and all automatic devices whose proper functioning would be affected by solids in the fluid.

B. Except as noted, strainers in water lines to be Y-pattern set in a horizontal (or vertical downward) run of the pipe. Where it is not feasible, strainers may be of enlarged cross-section flat type. In all case, arrange strainers as not to "trap" pipes, and to facilitate disconnection and opening-up for cleaning.

C. Provide approved valved dirt blowout connection for each strainer. Each valve located at hand-height and piped to the nearest floor drain, at a point where there is no risk of flooding or damage.

D. Clean the strainers as necessary until accepted by the Commissioner.

E. Install strainers upstream of automatic control valves with the same size as the inlet pipe serving the control valve.

3.05 AIR VENTS

A. Provide soft temper copper tube pigtail on manual vents so that end can be placed over a bucket.

B. Provide all manual air cocks and automatic air vents required throughout the water circulating system for the removal of air, of ample strength for the pressure to which they will be subjected. Provide automatic air vents at all high points.

C. Provide air vents of the compression type, all bronze construction, key operated. Provide each heat transfer element supplied with water with not less than 1/2" manual air vent. Furnish ten (10) keys. Provide air chambers where indicated.

D. Use inverted ball float traps for vent water risers, mains and branches and where required. Trap Size: 3/4" with inlet an overflow connections, both valved.

E. Provide manual air vent valves in the piping connections to each hot water heating coil and each chilled water coil (both supply and return where such are not automatically vented). Provide a 1/4" vent line from each air vent to nearest floor drain, or as directed, to suit job conditions.

F. Provide gate valves with capped bibb connections at all drain points. Hose bibbs only will not be acceptable. Install capped drains at all low points of the systems. Threads of hose bibbs to fit standard rubber hose connection.

3.06 INSTALLATION NOTES FOR SITE PIPING SYSTEMS

A. All piping and fitting shall be installed straight, and all joints shall be kept free from dirt and grit.

B. After trench has been excavated in accordance with these Specifications, pipes may be rolled to the trench, but shall be carefully lowered by suitable rigging and placing as herein provided. Pipe shall not be rolled into trench.

C. All straight pipe and special castings shall be cleaned by brushing and by washing out all foreign matter prior to laying. If the Commissioner so directs, a proper mandrel shall be provided by the Contractor which shall be drawn forward as each pipe or special casting is laid. All branches and other openings shall be stopped up by wooden plugs or heads until either connected of capped. Pipe and special casting shall be laid to required line or grade. Where necessary, temporary wood blocking shall be used; such blocking to be removed as backfilling progresses. Whenever it is necessary to connect with or relay existing water mains, such connections or alternations shall be made by Contractor as specified herein.

D. All taps and connections that are started must be completed before the closing down of operations at the end of the work day.

E. Plug or cap any remaining open ends which result from the removal of existing pipe which is to be abandoned. The open ends shall be plugged or capped with cast iron plugs or caps. Live ends of pipe shall be plugged or capped and backed with concrete to provide sufficient bearing equal to the pressure in the pipe times the area of the pipe as directed by the Commissioner.

F. All water lines shall have at least 4'-0" cover at all points. These depths shall be increased where necessary for making connections or for avoiding subsurface structures, drainage, sewer or other facilities or where frostline is greater.

G. Piping shall be properly aligned, graded and supported. Piping shall be of correct lengths to permit the joints to be made up without springing or forcing. Change in direction shall be made by use of fittings. Piping shall not be deflected from a straight line at joints in either horizontal or vertical plane, except as authorized by the Commissioner, and not to exceed the recommendations of the manufacturer.

H. During construction temporary plugs or caps shall be installed in completed portions of the piping as directed by the Commissioner. All portions of the Contractor's work shall be carried out so as to prevent the entrance of dirt or other foreign matter into the system.

I. Make all crossings as required by conditions encountered during construction at no additional expense to the Commissioner, including, but not limited to telephone conduits, cold water distribution, electric service, sanitary sewers, storm water drains and steam tunnels, etc.

J. The work includes providing material and labor for the installation of elbows, tees, short lengths of pipe, concrete thrust blocks, concrete encasement or supports and such other incidental which will provide an adequate clearance from an existing utility line and/or sufficient cover.

K. Be responsible for all damage to utilities and repair same at his own expense to the satisfaction of the Commissioner.

L. Provide vertical and horizontal separation between new sewers and water mains in accordance with Codes and Standards requirements.

M. Reaction or thrust backing shall be applied at all bends, tees, reducers, plugs, caps, valves and dead ends for the water main. Size and shape of concrete backing shall be as approved by the Commissioner, but in any case shall be sufficient to provide bearing equal to the pounds of pressure multiplied by the cross-sectional area of the pipe.

N. Backing shall be of concrete and shall be placed between solid ground and the fitting to be anchored. Backing shall be placed so that the pipe and fitting joints will be accessible for repair, unless otherwise directed by the Commissioner. Provide tie rods set into concrete. Provide one layer of tar paper between fitting and concrete.

3.07 INSTALLATION NOTES FOR INTERIOR PIPING SYSTEMS

A. It is the intent that each part of the plumbing systems shall be complete in all details and all lines provided with all control valves as indicated on Drawings, or as may be required for the proper control of the pipe lines under this Section so that any fixture, line or piece of apparatus may be removed for repair without interference or interruption of the service to the rest of the building.

B. The size of storm, soil, waste, water, and vent piping shall be as determined by the local rules and regulations for plumbing and drainage, except where specifically noted to be larger by the Specifications or plans; and all fixed rules of installation as set forth in the Rules and Regulations shall be followed as part of the Specifications.

C. Carefully examine the architectural plans and details and become familiarized with all conditions relative to the installation of piping, particularly where same is concealed behind furring or in hung ceilings.

D. Do not permit piping to be exposed beyond finished plaster lines unless specifically shown on Drawings. Consult with the other trades in the building and install piping in such a way as to least interfere with the installation of other trades.

E. Do not conceal or insulate piping until all required tests have been satisfactorily completed and work has been approved by the Commissioner and all other authorities having jurisdiction.

F. Branch connections of the drainage systems shall be made with "Wye" and long "Tee-Wye" fittings, short 1/4" bends, common offsets and double hubs will not be permitted. Short "Tee-Wye" fittings are to be used in vertical piping only.

G. Cleanouts shall be provided at base of all stacks, all changes of directions at the ends of branch runs where shown, every (50'-0") (75'-0") (100'-0") and as required by Code, and shall be terminated as described under cleanouts.

H. House drains: Slope at a minimum grade of 1/8" per foot downward in the direction of flow. Wherever possible, a 1/4" per foot pitch shall be maintained. Branch connections to stacks from fixtures shall pitch 1/4" per foot where possible. Attention is again called to the necessity of maintaining the ceiling height established.

I. Connection to roof drains shall be installed in conjunction with the roofing called for under another Division or Section of these Specifications and at such times as designated by this Contractor, so that the building is adequately protected during construction from damage by storm water. All piping shall be adequately and properly supported, and all joints shall be made up as hereinafter specified.

J. Furnish and install complete systems of vent piping from plumbing fixtures and other equipment to which drainage connections are made. Vent piping shall be connected to the discharge of each trap and shall be carried individually to point above the ultimate overflow level of the fixture before connecting with any other vent pipe; in general, this will be approximately 3'-6" minimum above the finished floor. Branches shall be arranged to pitch back to fixtures.

K. The individual vent pipes shall be collected together in branch vent lines and connected vent stacks, in paralleling soil and waste stacks. Wherever possible, vent stack offsets shall be made with 45 degree fittings. The heels of vent stacks shall be connected to adjacent soil stacks for purpose of draining condensation where possible. The waste of a fixture shall be connected to the base of each vent stack for the purpose of washing out any scales or dirt which may accumulate, or the soil stack shall be used to wash out the heel of the vent.

L. The tops of all soil and waste stacks shall be extended as additional vent pipes. The tops of all vent stacks shall run independently through the roof. Pipes smaller than 4" size shall be increased to 4" by means of approved increasers before passing through the roof slab. This provision shall apply only when future floors above are provided for.

M. Where complete concealment is impossible because of obstruction such as beams, ducts, lights, piping, do not install any work before first consulting with the Commissioner and his instructions (written or revised drawings) shall be followed.

N. Install capped drips at the foot of each gas riser and at each vertical change of direction. Install gas piping so that it will drain back to the risers, where possible. Do not bend pipes. All changes in direction to be made by the use of fittings. All reductions in sizes to be made with reducing tees, elbows or couplings. The use of flanged fittings or running threads is prohibited.

O. Provide all gas piping to all gas outlets and equipment requiring gas connections. Make all connections to such outlets and equipment and provide a full main size plug cock for each. Do not install gas valves in suspended ceilings.

P. Gas piping shall be installed in strict accordance with NFPA Pamphlet No. 54.

Q. Gas piping under floor slabs, inside of building, shall not be used. Tunnels or shafts containing gas piping shall be vented.

END OF SECTION

SECTION 22 11 00
FACILITY WATER DISTRIBUTION

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS
A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to provide Water Supply Systems as shown on the drawings and as specified herein.
1. Water Service.
2. Domestic Cold Water Piping.
3. Domestic Hot Water Piping.
4. Domestic Water Heaters.
5. Domestic Water Pressure Booster System.
6. Thermostatic Mixing Valves.

1.03 RELATED WORK
A. Pipe, Tube and Fittings - Section 221000
B. Hangers and Supports for Plumbing Piping and Equipment - Section 220529
C. Plumbing Fixtures - Section 224000
D. Plumbing Insulation - Section 220700
E. Plumbing Equipment, Specialties and Accessories - Section 223000
F. Electric Motors and Motor Controllers - Section 220513
G. Plumbing System Tests- Section 220577

1.04 QUALITY ASSURANCE
A. A.N.S.I. - American National Standards Institute
B. Building Code of the City of New York
C. American National Standards Institute: ANSI A112.1.2 - Air Gaps in Plumbing System.
D. American Society of Sanitary Engineering: ASSE 100 - Pipe Applied Vacuum Breakers; ASSE 1010 - Water Hammer Arrestors.
E. National Fire Codes - NFPA
F. A.S.H.R.A.E. 90-75

1.05 SUBMITTALS
A. Shop Drawings:
1. Pipe and fittings.
2. Valves.
3. Hose bibbs.
4. Domestic water heater/storage tank.
5. Pressure Booster System.
6. Thermostatic mixing valves.
7. Backflow Preventers
8. Water meter/strainers.

PART 2.00 - PRODUCTS

2.01 BASE BID MANUFACTURERS

A. Backflow Preventers/RPZ's:
1. Watts
2. Ames
3. Febco
4. Wilkins
5. Hershey - Grinnell
6. Conbraco

B. Hose Bibbs:
1. Speakman
2. Chicago Faucet

C. Domestic Water Heaters:
1. A.O. Smith Co.
2. Bock water heater.
3. Lochinvar.
4. PVI.

D. Pressure Booster Systems:
1. Syncro-Flo Inc.
2. SICO
3. Canariis Co.

E. Thermostatic Mixing Valve:
1. Armstrong.
2. Lawler Automatic Controls.
3. Holby.
4. Powers.
5. Symmons.

F. Water Meters:
1. Hersey
2. Neptune

2.02 PIPING

A. Underground:
1. Water Service: Ductile iron mechanical joint water pipe, asphaltic coated, cement lined with class 250 psi fittings.
2. Provide flanged connection on service inside building.
3. Provide all tie-rods and accessories in accordance with NFPA standards.

B. Inside Building:
1. Domestic Water: Type L hard drawn copper tubing with cast bronze or wrought copper fittings. Following options are permitted:
a. Grooved end wrought copper with ASTM A536 ductile iron couplings of the angle-pattern bolt pad type, coated with copper colored alkyd enamel, with synthetic rubber pressure-responsive FlushSeal® sealing gasket for grooved end pipe. (Gaskets used on potable water systems shall be UL listed in accordance with ANSI/NSF 61 for hot (+180°F) and cold (+86°F) potable water service). Fittings and couplings shall be copper tube dimensioned. Flaring of pipe and fitting ends to IPS dimensions is not allowed. Victaulic Style 606.

b. For 2" and smaller: Vic-Press 304 pipe, couplings, fittings may be used with ASTM A312, type 304/304L stainless steel pipe. "O" rings used shall be UL listed in accordance with ANSI/NSF 61.

2. Fire standpipe/sprinkler: Steel pipe with threaded or flanged cast iron fittings. UL listed and FM approved
   a. Grooved end ASTM A536 ductile iron fittings. Victaulic FireLock®. Bolted clamp type ductile iron couplings with synthetic rubber pressure-responsive sealing gaskets for grooved end pipe, 500 psi wwp, similar to Victaulic Style 75 may be used.
      1) Rigid Type: Angle pattern bolt pads to provide rigidity and support and hanging requirements corresponding to ASME B31.1, B31.9 and NFPA 13. Victaulic Style 005 or 07.
      2) Flexible Type: Couplings shall provide stress relief and vibration attenuation. Victaulic Style 75 or 77.
   b. In lieu of threaded cast iron, carbon steel Pressfit® products may be used for fire protection service. Products shall be UL listed and FM approved for fire protection service to 175 psi.
3. CW Piping: Schedule 40 or SDR 26 PVC and socket type fittings.
4. HW Piping: CPVC pipe and socket type fittings.
5. See also section 221000 and 223000.

C. Exposed at plumbing fixtures:
1. Satin finish CP brass pipe with threaded cast bronze fittings.

2.03 WATER HAMMER ARRESTORS

A. Permanently sealed stainless steel nitrogen filled water hammer arrestors on all hot and cold water branches and headers to plumbing fixtures whether it is indicated on the Plumbing Drawings or not.

B. Sized and location in accordance with the manufacturer's recommendations and with PDI Standard WH 201 and shall bear PDI approval. Provide accessibility to all shock absorbers.

C. Provide at the top of water risers and at all quick closing valves, solenoid valves and at equipment such as sterilizers, washers.

D. Similar to Sioux Chief.

2.04 VACUUM BREAKERS

A. Install with any plumbing fixture or equipment, in each potable water supply outlet that may be submerged, or subject to back-siphonage, backflow, or that cannot be protected by a minimum air gap, or as directed by the local health department. Install in strict accordance with all State and Local authorities having jurisdiction.

B. Provide approved type vacuum breaker of the following type:
   1) Air gap -ANSI A112-1.2.
   2) Vacuum Breaker -ANSI A112.1.1

C. Vacuum breaking devices shall be readily accessible, in the same room with the fixture they serve.

D. Provide vacuum breakers for all serrated tip water outlets, hose and faucets, on piping supplying fixtures and equipment below the overflow level and interconnections with other systems which as make-up water supplies to heating or cooling systems.

E. Install vacuum breakers on piping to boiler make-up, cooling tower make-up, pump cooling and similar connections subject to back pressure. Vacuum breakers shall be similar and approved equal to Watts Model No. 9D for 1/2" and 3/4" sizes and Watts Model No. 900 for pipe sizes 1" and larger.

F. In addition to the vacuum breaker, provide and approved check valve on the supply side of the vacuum breaker.

G. The following outlets are exempt form the above requirements: hose bibbs for drainage of low points of piping systems, and drains from hot water storage tanks.

H. Hose connected vacuum breakers must assure against back-siphonage by relieving water under pressure when hose end is closed off. Unit shall be all brass construction, finished to match existing piping with either male or female inlet and hose-end outlet connection.

2.05 HOSE BIBBS

A. 1/2" chrome-plated angle valve with integral stop, renewable seat, composition washer, metal handle, vacuum breaker and 3/4" hose thread and wall flange on concealed piping.
   1. Speakman S-5911.
   2. Provide for noted Truck Wash hose racks.

2.06 WALL HYDRANTS

A. Anti-freeze type. All bronze with bronze working parts throughout, renewable nylon seat, nickel bronze face, operating key, vacuum breaker.
   1. J.R. Smith 5509QT- WC-W-NB, ¾" with flush box, cover and frame. Finish as specified by Commissioner.
   3. J.R. Smith 5609QT, exposed type. Finish as specified by Commissioner.

2.07 TRUCK WASH HOSE RACKS AND ACCESSORIES:

A. Hose:5/8" heavy duty type with ¾" adaptor. 50' lengths for each rack. Strahman A-X.

B. Nozzle: Heavy duty type similar to Strahman Hydro-Pro 150.

C. Rack: Enameled steel saddle. Strahman HR -100, secure to wall.

2.08 DRAIN VALVES

A. Three piece ball type with stainless steel ball and 3/4" hose and 300 psi wsp, similar to NIBCO No. 590.

2.09 WATER METER

A. AWWA Standard C700-90 approved:
   1. Compound type, cast bronze maincase, bronze operating parts, flanged ends:
      a. Neptune TruFlo, sizes 2" through 6".
      b. Provide with remote reading and billing accessories.
   2. Provide with plate strainer.

B. Plate Strainer: Similar to Neptune

C. Basket Strainers: Flanged cast-iron body clamped top and removable basket of perforated copper or stainless steel, similar to Bailey type 2.

2.10 DOMESTIC WATER HEATERS

A. Automatic Electric Storage Type
   1. HWH-1
   2. UL listed, NSF approved with required accessories and controls.
   3. Capacity: 6 Gallon at 140 degrees recovery rate 6 GPH and ceiling mount per detail.
   4. A.O. Smith DEL-6, 120V single phase, 1.5 kw

B. Automatic electric storage type:
   1. HWH-2
   2. UL listed, NSF approved with required accessories and controls.
   3. Capacity: 120 gallons at 140 degrees F, recovery rate 98 GPH.
   4. Glass lined commercial type. Heater should be rated at (24) KW 208 volts 3 phase, 60 cycle AC and constructed in accordance with ASME code, shall bear appropriate symbol and listed with the National Board as required.
   5. A.O. Smith **DRE**-120, 24 kW.

C. Provide water mixing valve at each heater: 125 PSIG working pressure, 200°F max temperature rating, rough brass Lawler series 66.

D. Provide warranty of three years for tanks and one year all other parts, from start-up.

2.11 TRAP SEAL PRIMER

A. Cast bronze, 1/2" connection, J.R. Smith #2699. Provide at all floor and funnel drains.

2.12 DOMESTIC WATER BOOSTER PUMP SYSTEM

A. See schedule on drawings.

B. Non-overloading characteristic so as not to exceed nominal rating of motor at any point on curve.

C. Complete package system:
   1. Field fabricate entire pump assembly as required.
   2. Pump manufacturer: Responsible for completeness of system including pumps, motors, controls, and controller and operation of system, including:
      a. Detailed piping connection drawings and wiring diagrams.
      b. Factory tested through complete range of operation.
      c. Supervise final adjustment of controls, place system in operation and instruct Commissioner's operator for one day.
   3. Complete package on common support:
      a. Piping and valves shall comply with specification on piping and valves for domestic water.
      b. Provide base with vibration isolators as detailed.

D. System Operation:
   1. Automatically maintain constant system pressure plus or minus 2 psi at discharge of main control valve regardless of system flow demands between zero and maximum flow.
   2. Automatic electrical alternation of lag pumps.
   3. Upon drop in system flow, lag pumps shall be stopped in reverse order of starting.
   4. Maintain system pressure at uniform constant pressure from varying higher discharge pressures with combination pressure reducing and non-slam check valves, 2-1/2" for lead pump, 3" and 2" main pumps. Variable Frequency Drives.
      a. Valves: Threaded or flanged cast iron body with stainless steel trim, adjustable hydraulically operated bronze (stainless steel mounted) pilot controlled spring diaphragm type, 250 psi wsp.
      b. Adjustment range 30-300 psi.
      c. Main valve with flow control.

E. Pumps
   1. Multi-stage centrifugal type.
   2. Butterfly suction and discharge valves.
   3. Stainless steel shaft sleeve, impeller, diffuser chamber and seal rings.
   4. Mechanical seal assembly with tungsten carbide faces.
   5. 2 heavy duty grease lubricated ball radial and thrust bearings in cast iron pedestal housing support pump.
   6. ANSI flanged connections.
   7. Cast iron suction/discharge chamber.

F. Motors:
   1. NEMA Premium, TEFC, continuous duty type.
   2. Vertically mounted with grease lubricated ball bearings.
   3. Hollow shaft type allowing axial adjustment of impellers.
   4. Wound for noted controller.

G. Mounting:
   1. Connected with flexible coupling.
   2. Aligned, bolted and doweled in place on heavy steel channel base or extended type cast iron bed plate with drainage lip, by manufacturer. Provide coupling guard.

H. Provide automatic No Flow device to stop lead pump and start pump again at pressure drop, complete with pressure switch.

I. Provide adjustable thermal detector within each pump casing to, at predetermined temperature, purge pump of hot water through relay and purge valve.
   1. Purge valves: 1/2 inch threaded IBBM solenoid valve with self closing control (120 volt, single phase).

J. Flow switch: Rotometer type with visible etched glass gauge for indicating flow, and compensating stainless steel orifice.

K. Variable Frequency Drives:

1. Each pump shall have its own variable frequency drive with the following features: The drive shall be a voltage source, GTR or IBGT power transistor based inverter-PWM Type. The inverter shall use a high carrier frequency to reduce drive and motor noise.
   a. Drive shall be capable of operating in an ambient temperature between 15°F and 100°F and a line voltage variation of less than 10%.
   b. Self protection features shall include: under voltage and over voltage protection, current overload protection, short circuit protection, power failure protection, ground fault protection, and over-temperature protection.
   c. A four digit LED readout shall be provided to indicate the following: drive enabled, output frequency, and all VFD fault conditions.
   d. The drive shall be capable of automatically restarting after any of the following: overload over-voltage, converter over-current, inverter over-current, or power failure.
   e. The following drive parameters shall be user adjustable: acceleration speed (1 to 300 seconds), deceleration speed (1 to 300 seconds), minimum speed, and maximum speed.
   f. The drive shall have a front mounted "HAND-OFF-AUTO" selector switch and a potentiometer for adjusting drive speed in the "HAND" position.

L. Pressure Sensor/Transmitter:

1. A digital pressure transmitter shall be connected system header. The transmitter shall have 1.0% accuracy, stainless steel wetted parts and a waterproof enclosure. Transmitter shall be capable of withstanding over pressurization of double its range. Transmitter shall have independent zero and span adjustments.

M. Sequence of Operation:

1. The control system shall start, stop and vary the speed of the pumps as required by system demand. The controller shall sequence pumps based on pressure readings from a pressure transducer and flow readings from an insertion type paddlewheel flow sensor. As a backup, a factory set pressure switch shall sequence pumps when system pressure falls below the setpoint. Should the system demand exceed the capacity of the lead pump or should the lead pump fail to operate, the lag pumps shall be started, in sequence. Upon drop in system flow, the pumps shall be stopped in reverse order. In the event of an abnormally low suction condition, the system shall shutdown and activate the alarm. Automatic sequencing shall include the following features: sequence shifting that adjusts the pump sequence when any pump is disabled, successive and 24 hour alternation of equal capacity pumps with pump overlap, lag pump exerciser function, special sequencing to reduce surges during power restoration, sequential sequencing of lag pumps, minimum run and stop delay timer for each pump, and field adjustable time delay for lag pump pressure start signals.

N. Control Panel:

1. Furnish a controller in a NEMA-1 enclosure with individual through the door circuit breaker disconnect switches and variable frequency drives for each pump. The controller shall include a 120 volt fused control circuit transformer, automatic 24 hour alternation circuit, programmable logic controller having non-volatile EEPROM memory, operator interface, digital flow meter with totalization and multiple position selector switch. Indicating lights shall include: control power available, pump run, low system pressure and low suction pressure. Alarms shall be audio-visual with a pair of NO/NC auxiliary contacts for remote trouble alarm. The panel shall be arranged for one main power feeder. All of the above shall be factory internally pre-wired and tested in accordance with provisions of the National Electric Code.

   All control wires shall be individually numbered, and each component shall be labeled accordingly. All internal wiring shall be copper stranded, A.W.G. with a minimum insulation of 90°C. The complete assembly shall have the Ul-508 listing mark for industrial control panels.

O. Controller:

1. Combination unfused disconnect switch and magnetic starter.
   a. Overload protection for each phase leg.
   b. Under voltage release.
   c. Across-the-line type.
2. 120 volt control circuit transformer with fuse in secondary and automatic transfer switch on primary.
3. Heavy duty HOA selector switches.
4. 4 PDT transfer switch.
5. Automatic electric alternator.
6. Flow switch with indicating lights.
7. Pressure switches.
8. Necessary relays.
9. Low suction pressure cutoff with automatic reset.
10. Pneumatic timers.
11. Test buttons.
12. Emergency start circuit on loss of pressure of lead pump.
13. Contact for remote low system pressure alarm.
14. Pump running and alarm lights.
15. 4-1/2 diameter suction, discharge and system gauges.
16. Mounted and pre-wired in single NEMA-1 enclosure.
17. All gauges and pilot lights: visibly mounted.

P. Provide 1/4" in. gauge piping as specified for Domestic Water, complete with brass gauge cocks from control panel to suction header, discharge and discharge of each pump.

Q. Quality Assurance & Substitutions:
All equipment under this section shall be furnished by a single supplier having sole responsibility for proper functioning of the system. The equipment shall be products that the manufacturer has regularly produced for a minimum of three (3) years. The manufacturer shall have on staff a register professional engineer (PE) and degreed mechanical and electrical engineers.
The booster system manufacturer shall comply with OSHA and Federal Regulation 29 CFR 1910.399 requiring complete system certification by an NRTL (Nationally Recognized Testing Laboratory (Independent Third Party)). The system shall be certified by ETL under sections 219.225 & 281 and also be UL Listed under 9F35.

R. Factory Test and Certification:
The booster system and its component parts shall undergo a hydrostatic pressure and complete operating flow test from zero to 100% design flow rate under the specified suction and net system pressure conditions. The testing shall comply with ANSI/SAE J745-APR87 Hydraulic Power Sump Test Procedures. The testing shall also include a hi-pot voltage test of the system. The final system certification shall include copies of the ETL and UL Certifications and test data as recorded by X-Y plotter. The specifying Engineer shall have the option to witness the test. The entire system shall be painted after testing.

S. Start-Up & Warranty
The Pump Manufacturer's Representative shall have single source responsibility for the pumps and complete control system. Start-up services including pump alignment, adjustment and field calibration of controls, operator instruction and system warranty shall be included in the price for the system. The warranty shall be 12 months from date of start-up, not to exceed 18 months from date of shipment.

T. Installation & Field Piping
Install the system adjacent to a floor drain to prevent building damage in the event of pump mechanical seal failure. The contractor shall interconnect the tank and system, as described above and shall pipe the discharge of the over temperature purge valves to the floor drain. The contractor shall install a full sized bypass around the pump system with check and isolation valves.

U. Provide 1/4 inch gauge piping as specified for Domestic Water, complete with brass gauge cocks from control panel to suction header, discharge and discharge of each pump.

2.13 THERMOSTATIC MIXING VALVE

A. Self-actuated, self-sensing, three-way type, union ends, manually adjustable, built-in strainer. ASSE 1017 compliant.

B. Bronze body, 200 p.s.i. working pressure, nickel plated piston, copper actuator bulb and capillary.

C. Capacity - 25 GPM, pressure drop 2 p.s.i., temperature range - 100 degrees F. to 200 degrees F., set point - 120 degrees F.

D. Armstrong RADA R series. Size as noted on drawings.

E. Point of use: ASSE 1016 compliant, brass body, integral check valves, adjustment cap.
1.Watts series MMV, size as noted on drawings.

2.14 FLOW CONTROL FITTINGS

A. Provide flow control fittings as manufactured by the Dole Valve Company or approved equal. Flow control valves are to be installed in accordance with the manufacturer's recommendations and shall be provided for all sinks, lavatories and electric water coolers.

B. All lavatories: Dole Model #FMA 3/8" male pipe inlet and 3/8" female pipe outlet for rigid hot and cold supply risers. Flow rate 0.5 gpm.

C. All sinks including equipment with sinks, mop receptors, service sinks and kitchen sinks, showers: Dole Model #FMC male pipe inlet and 1/2" female pipe outlet for hot and cold supply risers. Flow rates 4 GPM for service sinks and mop receptors 3 GPM for kitchen and casework sinks, 2.5 gpm for showers.

D. Electric Water Coolers; Dole Model #F3/4C male pipe inlet and 3/8" female pipe outlet for cold supply riser. Flow rate 0.5 gpm.

E. All exposed to view flow control fittings shall be chrome plate nickel, or nickel plated.

2.15 BACKFLOW PREVENTER ASSEMBLIES

A. UL listed for sized 2 1/2" and larger. AWWA compliant.

B. Bronze body for 3/4" and 1" size. IBBM for 2 1/2" and larger.

C. Double check valve backflow preventer assempbly - Two brass independently operated internally spring loaded check valves, two gate valves and four test cocks for field testing. Check valves must be loaded to withstand 1 psi in direction of flow and must have soft rubber discs to assure positive closure. All internal parts must be readily accessible for maintenance without moving device from line, must be installed in a horizontal position and be accessible for periodic testing.

D. Working pressure and temperature rating: 175 psi and temperature of 140 °F. Unit shall be shipped completely assembled and all valves, check valves, nipples and other fittings shall conform to the piping material in which they are installed.
1. Febco 805, 850 and 870 series.

E. RPZ backflow preventer on main domestic service: Watts No. 909 OS&Y.

F. RPZ on HVAC Equipment: Watts No. 009QT.

G. For sizes see drawings.

2.16 DOUBLE CHECK DETECTOR ASSEMBLIES

A. UL listed, FM approved. AWWA standard C510-92 compliant.
B. 175 psi: wwp, epoxy coated cast iron flanged body with bronze seats.
C. UL/FM approved. OS and Y, IBBM, flanged gate valves.
D. Watts no. 709 DCDA with bypass consisting of Watts 007M1 double check valve and 5/8" x 3/4" water meter assembly.
E. Provide tamper switches on each valve.

2.17 LOCAL EQUIPMENT AND FIXTURE PRESSURE REGULATORS

A. Furnish and install a CASH-ACME type HER or approved equal water pressure reducing valve on cold and hot water branch lines for food service, laboratory and medical equipment as provided under other Division or Sections of this Specification. Pressure regulators shall be of the differential type, self-contained, single seated, direct acting, spring locked type with no diaphragm. Valve body and spring housing shall be bronze and all other parts shall have a corrosion resistance equal to bronze.
B. All valves shall be sealed against leakage including a top cap over the adjusting screw.
C. Internal parts subject to wear shall be replaceable without removing valve from the pipe line, and valve shall be provided with means to adjust outlet pressure setting.
D. Valves shall have sufficient water capacities to provide required rates of flow and shall be set at discharge pressure as required by the point of use.

2.18 RELIEF VALVES

A. Provide adjustable bronze spring and diaphragm combination pressure and temperature type relief valves with test level and automatically resetting type thermostatic element. Pipe drain to spill over mop receptor floor drain, janitor sink, or to other safe location.
B. Relief valves shall be ASME rated.

2.19 PRESSURE AND TEMPERATURE GAUGES

A. Base Names Manufacturer - Trerice
B. Pressure and temperature gauges shall be located as shown on the drawings and as indicated below:
    1. Pressure Gauges:
        a. High and low pressure side of pressure reducing valve.
        b. Discharge side of water meter, provide tee and capped valved connection on inlet side.
        c. Hot water tank.
        d. Compound gauge at suction side of each pump.
        e. Install capped tee with needle valve at discharge side of each pump for future pressure gauge.
    2. Temperature Gauges:
        a. Hot water supply and return piping at hot water tank.
        b. Downstream side of mixing valve to indicate mixed water temperature.

C. Pressure gauge shall be 4- 1/2" diameter with aluminum case, chrome ring, white background dial with black markings, glass window, micrometer pointer, stainless steel movement, 1/2 % accuracy over full scale range, phosphor bronze bourdon tube, 1/4" N.P.T. brass socket, bottom or back outlet, 0 psi to 200 psi for straight pressure gauge, 30" of vacuum to 300 psi for compound range - Trerice #500X. Gauges to be used on sewage or storm water system shall be Trerice #500X with Trerice #877-2 diaphragm seal. Pressure and compound gauges shall be installed with Trerice #872-2 snubbers and Trerice #735 needle mounted using copper tubing.

D. Temperature gauge shall be 4- 1/2" diameter with aluminum case, polished chrome ring white background dial with black markings, glass window, red tipped aluminum pointer, 7/16" x 2- 1/2" copper bulb, 1/2" N.P.T. brass union connection, adjustable angle direct mounted or adjustable angle bracket mounted with 5'0" bronze armored copper capillary as required, 30 degrees F. to 240 degrees F. Dial range. Trerice No. V80445 or V80341 as required.

E. Other acceptable manufacturers - Taylor, Wexler.

PART 3.00 - EXECUTION

3.01 INSTALLATION

A. Water Service:

1. Arrange with the Water Department and pay for the installation of the connection to the water main approximately as located on the contract drawings. From this connection extend into the building, with curb box, indexed valve box, post indicator valve, etc., as required.
2. Install complete cold and hot water system as indicated on the drawing as required.

B. Piping:

1. Free of traps:
   a. Grade for complete control and drainage of system.
   b. Grooved end pipe shall be clean and free of indentations, projections and roll marks in area from pipe end to groove. All grooved products shall be of one manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.
2. Grooved end pipe shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. All grooved products shall be of one manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.

C. Prevention of Water Contamination:
   1. Water supply connections to plumbing fixtures and equipment.
      a. Provide over-rim water supplies whenever possible.
      b. Provide following with approved vacuum breakers and/or check valves or backflow preventors as noted or required.
         1. Necessary below-rim connections.
         2. Hose connections.
         3. Connections or outlets for HVAC piping systems.
      c. Approved air gaps on water piping where noted or required by local authorities.
   2. Equipment supplied under other sections of work and/or by Commissioner, and having below-rim water supply connections, may not arrive on job in Code-approved condition.
      a. Provide missing vacuum breakers and/or check valves, or relocate same to Code approved positions.

D. Connections to Equipment:
   1. Flanges, unions or threaded adapters.

E. Branch Water Connections:
   1. Provide three elbow swing connections for all water lines connecting to mains, sub-mains or branch mains.

F. Terminate plugged or capped connections in threaded plug or threaded nipple and cap as required, except as otherwise noted.

G. Brass of Copper Piping connecting to Galvanized Piping:
   1. Provide dielectric fittings or flanges.

H. Provide drain valves at all low points in system.

3.02 PUMP INSTALLATION REQUIREMENTS

A. The alignment of all pumps shall be checked and each pump shall be properly aligned after the piping is completed and before the pumps are placed in service.

B. Mechanical seals and shaft sleeves shall be replaced by this Contractor without charge in the event the unusual wear of faulty operation occurs during guarantee period.

C. Where pumps components are or may come in contact, although the materials may be basically similar, use hardness differentials of at least 50 Brinell to prevent seizure and reduce wear.

D. Provide shaft packing or seals compatible with the pump design, fluid handled and in accordance with the manufacturer's recommendations.

E. Balance pump impellers and all other moving components statically and dynamically.

F. Completely align and level pumps, motors and bases. Where pumps and motors are shipped as a unit, realign them in the field.

G. Grout equipment base plates completely to provide a rigid-non-deflecting support.

H. Secure pumps to bases with proper size anchor bolts and vibration isolators.

I. Each and align mechanical seals in accordance with the manufacturer's recommendations.

J. Provide water supply for cooling and lubrication of seals and/or packing where required.

K. Provide flexible connection for pumps. Provide spring hangers for piping for pump to partition or wall penetration.

L. Pumps must operate stably without pulsation, vibration or internal re-circulation. Pump operating characteristic curves must meet the following requirements:
   1. The pump operating point must fall on or below an impeller diameter curve which is not more than 85% of the maximum diameter impeller which can satisfactorily operate in the casing.
   2. The pump operating point must fall below the point of no flow head pressure.
   3. Pump operating point must be to the right of the midpoints of the peak efficiency curves. Selected efficiency shall be not more than 3% points below maximum efficiency.
   4. A 10% increase in head pressure over the specified will result in not more than a 20% reduction in GPM and will not affect the stability of the pump.

M. Select pumps so that when operating at rated RPM the pump motor cannot be overlooked despite variation in pumping head over entire range of curve.

N. Where initial and ultimate operating conditions are specified, these shall be achievable by changing the pump impeller with no modifications to the casing.

O. Upon completion of the installation, test all equipment under field operating conditions to demonstrate capability of the equipment to meet specification requirements.

P. Submit results of factory tests with the equipment shop drawings. Include result of factory and field tests in the Instruction Manual.

Q. Perform field tests to demonstrate the ability of the pumping equipment to meet contract requirements. Compile and certify the following data:
   1. Water flow, GPM, at rated hand.
   2. Shutoff head.
   3. Operating kilowatts for measured voltage, amperes, power factor.

END OF SECTION

SECTION 22 13 00

FACILITY SANITARY SEWERAGE

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS
- A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED
- A. Work of this Section includes all labor, materials, equipment and services necessary to provide Drainage Systems as shown on the drawings and as specified herein.
  1. Complete Sanitary Systems:
     - a. Connections to existing piping.
     - b. Connections to plumbing fixtures.
     - c. Connections to equipment requiring same.
     - d. Floor drains
     - e. Sump Pumps
     - f. Oil Interceptor
     - g. Sewage Ejectors

1.03 RELATED WORK
- A. Pipe, Tube and Fittings - Section 22 10 00
- B. Hangers and Supports for Plumbing, Piping and Equipment- Section 22 05 29
- C. Plumbing Fixtures - Section 22 40 00
- D. Plumbing Insulation - Section 22 07 00
- E. Plumbing Equipment, Specialties and Accessories - Section 22 30 00
- F. Plumbing Systems Tests - Section 22 05 77
- G. Electric Motors and Motor Controllers - Section 22 05 13

1.04 QUALITY ASSURANCE
- A. A.N.S.I. - American National Standards Institute
- B. Building Code of the City of New York
- C. American National Standards Institute: ANSI A112.1.2. - Air Gaps in Plumbing System
- D. New York State Department of Environmental Protection

1.05 SUBMITTALS
- A. Shop Drawings:
  1. Pipe and fittings.
  2. Drains.
  3. Cleanouts.
  4. Valves.
  5. Traps.
  6. Sump and Sewage Pumps and accessories.
  7. Oil Interceptor.

PART 2.00 - PRODUCTS

2.01 BASE BID MANUFACTURERS

A. Floor Drains, Cleanouts, Plumbing Fixtures Supports:
   1. J.R. Smith Manufacturing Co.
   2. Zurn Industries, Inc.
   3. Josam Manufacturing Co.
   4. Wade Division, Tyler Pipe & Foundry Co.
   5. Ancon.
   6. Proset Systems, Inc.
   7. Flygt Pumps.

2.02 MATERIALS

A. Aboveground Storm and Sanitary Piping:
   1. Except as noted below: Cast iron hubless soil pipe and fittings, service weight, coated.
   2. Storm system: Cast iron hub and spigot soil pipe and compression joint fittings.
   3. Couplings: Type 304 Stainless Steel, Neoprene Gasket, Four Clamps (six for pipe size 5" and longer). Anaheim Foundry Company A Husky @ Series 4000 or approved equal.

B. Chrome Plated Brass Piping:
   1. Exposed in rooms with fixtures and equipment in finished areas.

C. Sump and sewage ejector discharge: Schedule 40 steel pipe, galvanized including fittings.

2.03 DRAINS

A. Heavy cast iron, with double drainage flange and weep holes, with outlet connections as indicated and or sizes indicated on Drawings. Removable sediment basket shall be of heavy-duty one-piece construction as specified hereinafter. All strainers or grates shall be secured with vandalproof spanner type screws, unless otherwise specified.

B. In membrane waterproof floors or showers: Provide with 6 lb. lead flashing or 20 oz. soft rolled sheet copper and secured to the flashing flange with brass bolts and cast iron clamping device. Flashings shall bond not less than 1'-0" on all sides into membrane waterproofing.

C. On roofs, furnish and set, in conjunction with the roofer, and when directed by the General Construction Contractor, approved roof drains of cast iron unless otherwise indicated.

D. Flashing of 6 lb. lead or 20 oz. soft rolled sheet copper 34" x 34" shall be furnished and installed at each roof drain by means of non-puncturing type flashing clamping device.

E. Set all drains in such a way that the floor finish and top of the drain will be plumb and flush with finish floor without requirements for future additional extension, modifications, etc.

F. When Dex-O-Tex and/or vinyl waterproof floor is indicated on the Architectural Drawings, all drains must be provided with required flanges.

G. All drains, except as noted, shall J.R. Smith Mfg. Co. or approved equal and shall be as noted.

2.04 FLOOR DRAINS

A. Conforming to ANSI A112.21.1

B. Coated cast iron body.

C. Integrated double drainage flange and weep holes.

D. No-hub outlet.

1. Type "A" (Toilet Rooms and Shower Drains): Smith #2005-A, with nickel bronze 5" round top in toilets, 6" top in showers.

2. Type "B" (Mechanical Rooms): similar to Type "A" with bottom bar grate. Smith #2320.

3. Type "C" (Truck Wash Station): Smith 2614C-N-DBS heavy duty, hubless outlet with dome bottom strainer. Coordinate with GC for setting in existing slab and waterproofing.

4. Type "D" (Garage Drains)(GD): Heavy duty cast iron body with 11-1/2" diameter top, ductile iron grate and bucket. Jay R. Smith 2233.

2.05 DUPLEX SUMP PUMPS

A. Duplex submersible pumps with electrical controls, and accessories for a complete automatic system.

B. Capacity: 100 G.P.M. at total head 30 feet. Motor to be 1 Horsepower, 3 Phase, 60 cycles for operation at 208 volts.

1. Similar to Flygt.

C. Submersible motor to be constructed with open winding and to operate in clean dielectric oil for cooling winding and lubricating motor bearings. Motor shaft to be sealed with mechanical shaft seal, having super lapped seal rings of carbon and ceramic. Integral motor and pump shaft to be of stainless steel supported by two ball bearings.

D. Pump and motor housings to be of cast iron. Impeller to be cast iron of the non-clog type, passing 3/4" solids. All fasteners to be of 18-8 stainless steel.

E. Mercury switch level controls shall be used to control sump level. To control automatic operation of pumps, three mercury switch level controls shall be supplied. Two of these controls act to close circuit for on-off operation at selected levels required and to operate alternator for alteration of sump on each cycle of operation. A third control acts as override and closes circuit of override and operates both pumps together. A fourth optional control acts at high water level to close circuit of alarm system. All controls to be fastened to 1- 1/4" pipe with plastic ties. Pipe supported by removable cover plate attached to cover.

F. A NEMA 3R enclosure shall be furnished. For single phase pumps the control panel shall include - contactors for each pump, and alternating relay circuit, run lights for each pump, circuit breakers for each pump and H-O-A switches for each pump, with overload protection in the motor. For 3 phase pumps, the control panel shall include magnetic starters for each pump with overload protection where required run lights, circuit breakers for each pump, and H-O-A switches for each pump and an alternating relay circuit. Control panels include a transformer where required.

G. The high water alarm shall include: Alarm bell to be supplied in separate enclosure. Includes a warning light and silencing switch. Locate alarm in building engineer's office.

H. A steel sump cover with separate steel pump covers shall be supplied. A separate cover shall be supplied for mounting level.
I. Control wiring shall be provided by this Contractor.
J. The installation shall be complete with all accessories required to obtain approval of the authorities having jurisdiction.
K. Provide a clog-proof, self-cleaning, check valve in the discharge from each pump.
L. Warrant the entire installation for one year from start-up.
M. Pit Cover:
   1. Reinforced waterproof concrete by GC. Size as noted on drawings.
   2. Cover: 3/4" thick epoxy coated checkered steel gasketed with openings for:
      a. Pumps.
      b. Controls.
      c. Alarm tube.
      d. Vent.
      e. 14" x 20" gasketed access manhole cover.
   3. Install top of cover flush with finished floor with suitable frame of galvanized steel with welded stops and lugs for anchoring into concrete.

2.06 DUPLEX SEWAGE EJECTORS

A. Duplex submersible pumps with electrical controls, and accessories for a complete automatic system.
B. Capacity: 50 G.P.M. at total head 20 feet. Motor to be 2 Horsepower, 3 Phase, 60 cycles for operation at 208 volts.
   1. Similar to Flygt "Cutter" pumps.
C. Submersible motor to be constructed with open winding and to operate in clean dielectric oil for cooling winding and lubricating motor bearings. Motor shaft to be sealed with mechanical shaft seal, having super lapped seal rings of carbon and ceramic. Integral motor and pump shaft to be of stainless steel supported by two ball bearings.
D. Pump and motor housings to be of cast iron. Impeller to be cast iron of the non-clog type, passing 3/4" solids. All fasteners to be of 18-8 stainless steel.
E. Mercury switch level controls shall be used to control sump level. To control automatic operation of pumps, three mercury switch level controls shall be supplied. Two of these controls act to close circuit for on-off operation at selected levels required and to operate alternator for alteration of sump on each cycle of operation. A third control acts as override and closes circuit of override and operates both pumps together. A fourth optional control acts at high water level to close circuit of alarm system. All controls to be fastened to 1- 1/4" pipe with plastic ties. Pipe supported by removable cover plate attached to cover.
F. A NEMA 3R enclosure shall be furnished. The control panel shall include magnetic starters for each pump with overload protection where required run lights, circuit breakers for each pump, and H-O-A switches for each pump and an alternating relay circuit. Control panels include a transformer where required.
G. The high water alarm shall include: Alarm bell to be supplied in separate enclosure. Includes a warning light and silencing switch. Locate alarm in building engineer's office.

H. A steel sump cover with separate steel pump covers shall be supplied. A separate cover shall be supplied for mounting level.
I. Control wiring shall be provided by this Contractor.
J. The installation shall be complete with all accessories required to obtain approval of the authorities having jurisdiction.
K. Provide a clog-proof, self-cleaning, check valve in the discharge from each pump.
L. Warrant the entire installation for one year, from start-up.
M. Floor Mounted Ejector Basin:
   1. Reinforced waterproof fiberglass. 4'-0" diameter x 5' -0" high.
   2. Cover: 3/4" thick epoxy coated checkered steel gasketed with openings for:
      a. Pumps.
      b. Controls.
      c. Alarm tube.
      d. Vent.
      e. 14" x 20" gasketed access cover.
   3. Install unit on reinforced concrete pad, 4" high.

2.07 OIL INTERCEPTOR
A. Capacity: 100 gpm. 250 gallon storage tank, 4" inlet and outlet connection, double wall containment, high level sensor and control panel. 4" cleanout access, bitumastic coating inside.
   1. J.R. Smith 8599-100-250-DWC.
   2. See details on drawings.
   3. Install unit with steel framing to align with existing sewer line exiting building.

2.08 CLEANOUTS
A. Conforming to ANSI A112.36.2.
B. Cast iron with bronze plug, full size up to 4" and at least half size for larger pipes with 4" minimum.
C. Provide easily accessible cleanouts where indicated to make entire drainage system accessible for rodding. Provide at least 18 inch clearance to permit access to cleanout plugs.
D. Cleanouts for cast iron pipe shall consist of tapped extra heavy cast iron ferrule caulked into cast iron fittings, and extra heavy brass screw plug with solid hexagonal nut.
E. Cleanouts turning out through walls and up through floors shall be made by long sweep ells of "Y" and 1/8" bends with plugs and face or deck plates to conform to architectural finish in room. Where no definite finish is indicated on the Architectural and/or Mechanical Drawings, wall plates shall be chrome plates cast brass and floor plates shall be nickel bronze. Screws in cleanouts in finished areas shall be vandal-proof.
F. The following schedule indicates the various types of cleanouts required at various locations indicated on the Drawings. Cleanouts shall be J.R. Smith Mfg. Co. or approved equal. The characteristics and quality of the cleanout shall be as follows:
   1. Cleanout fitting in vertical stacks shall consist of tapped tees, capable of receiving a rough brass raised head cleanout plug.
      a. J.R. Smith 4530 series.
   2. Cleanouts in Mechanical Equipment Rooms:
      a. J.R. Smith 4220 series.

3. Cleanouts in finished areas. With recess for tile floors:
   a. J.R. Smith 4140 or 4020 series.
4. Cleanouts in Dex-O-Tex waterproof floors:
   a. J.R. Smith DX4343.
5. Cleanouts for 3 or more fixtures piped horizontally shall be extended to wall cleanouts.
   a. J.R. Smith 4452 or 4472 or 4402.

G. All cleanout plugs shall be brass and lubricated with graphite before installation.

2.09 TRAPS

A. Each fixture and piece of equipment requiring connection to the drainage system shall be separately trapped by means of a water seal trap placed as close to the fixture as possible.

B. All running traps shall have inlet handhole cleanouts and brass plug cleanouts in bottom. Cast iron traps in ground: omit bottom plug. All exposed P traps shall have bottom cleanouts and be chromium plated cast brass.

2.10 STACK SLEEVES

A. For pipes through roof with cast iron body. The space between the flashing sleeve and the pipe passing through the same shall be caulked watertight with lead.
   1. J.R. Smith 1740C (caulked).

PART 3.00 -EXECUTION

3.01 INSTALLATION

A. Slope horizontal drainage piping 3" and smaller, 1/4" per foot where possible, but minimum 1/8" per foot with minimum computed velocity 2 fps.

B. Slope horizontal drainage piping 4" and larger, 1/8" per foot except as noted.

C. Provide hanger support at starting end of all drainage lines which turn from vertical to horizontal.

D. Changes in direction of drainage piping by use of:
   1. 45 wyes.
   2. Long turn tee wyes.
   3. Long sweep quarter bends.
   4. Sixth, eighth or sixteenth bends.

E. Slip Joints: On fixture trap inlets or elbows connecting to fixture tailpieces only.

F. Vent Piping: Grade to drain out condensation and connect at base to prevent accumulation of rust.

G. Locate cleanouts as follows:
   1. Approximately every 50 feet on horizontal drainage piping.
   2. Changes in direction.

H. The oil/water separator system manufacturer shall provide complete start-up services and reference documentation. Reference documentation shall validate a minimum of ten (10) similar systems in operation. System start-up supervision, field calibration of instrumentation and initial operational responsibility.

END OF SECTION

SECTION 22 30 00

PLUMBING EQUIPMENT, SPECIALTIES & ACCESSORIES

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to provide Equipment, Specialties and Accessories as shown on the drawings and as specified herein.

1.03 RELATED WORK

A.	Pipe, Tube and Fittings	-Section 221000
B.	Plumbing Fixtures	-Section 224000
C.	Facility Sanitary Sewerage	-Section 221300
D.	Facility Water Distribution	-Section 221100
E.	Facility Fuel System	-Section 231000
F.	Fire Standpipe System	-Section 211200
G.	Automatic Sprinkler System	-Section 211300

1.04 QUALITY ASSURANCE

A.	A.N.S.I.	-American National Standards Institute
B.	A.W.W.A.	-American Water Works Association
C.	F.S.	-Federal Specifications
D.	N.F.P.A.	-National Fire Protection Association
E.	A.G.A.	-American Gas Association
F.	C.G.A.	-Compressed Gas Association
G.	U.L.	-Underwriters Laboratory
H.	Plumbing Code	

1.05 SUBMITTALS

A. Shop Drawings:
   1. Plumbing Equipment.
   2. Plumbing Specialties.
   3. Plumbing Accessories.

PART 2.00 - PRODUCTS

2.01 PIPE EXPANSION COMPENSATORS

A. Any breaks or damage to the piping system or to the Work of other Sections within the period of the guarantee due to improper provision for expansion and contraction must be replaced at this Contractor's expense.

B. This Contractor is to provide for expansion of pipes by providing expansion compensators and/or expansion loops and shall provide anchors at pump discharge and suction lines. All expansion loops shall be pre-stressed.

C. At connections of branches to water mains, risers and at connections to heaters, coolers and other equipment, and at risers, provide sufficient number of elbow swings to allow for proper expansion and contraction of piping.

D. Provide in hot water recirculation pipe lines (except at building expansion joints) 3 inches and smaller and for system pressure less than 51 psi, Flexonics or an approved equal Model HP expansion compensators having two-ply phosphor bronze elbows and brass shrouds and end fittings, as manufactured by U.O.P. Flexonics Division, Bartlett, Illinois. All internal parts shall be of non-ferrous metals. Compensators shall have integral guides extending the full length of the bellows travel. Compensators shall have external positive anti-torque devices to prevent twist. All compensators shall be listed under NSF standard 61.

E. Provide in hot, hot water recirculation piping, except at building expansion joints, etc., pipe lines 4 inches and larger and for system pressures exceeding 50 psi, Flexonics controlled-flexing expansion joints as manufactured by U.O.P. Flexonics Division, Bartlett, Illinois, or approved equal, with plate steel flanges having ANSI drilling, pipe nipple ends beveled for welding, forged steel ANSI flanges to suit the installation. The bellows shall be hydraulically formed from a stainless steel reinforcing neck ring and control rings shall be of a design to limit movement of each corrugation, as well as to carry loop stress caused by internal pressures. Where required, the bellows shall be annealed and/or stress relieved. Before assembly, the corrugated bellows shall be pickled to remove all scale formed by annealing and passivated to provide the maximum corrosion resistance. All lines in which expansion joints are installed must be securely anchored and guided in accordance with manufacturer's recommendations.

2.02 VIBRATION ISOLATION

A. Base Named Manufacturer - Consolidated Kinetics

B. All mechanical equipment over 1 horsepower unless otherwise noted, shall be isolated from the structure by means of resilient vibrator and noise isolators. Mounts and bases shall be as listed in the equipment schedule, and as described herein.

C. (1) "N" Mounts - Type RD neoprene mounts, incorporating completely enclosed metal inserts to permit bolting to the supported unit.

(2) "F" Mounts - Type KIP-Q precompressed molded fiberglass isolation pads, neoprene-jacketed and stabilized during manufacturer.

(3) "S" Mounts - Type FDS freestanding, unhoused stable spring mounts, incorporating leveling bolts, and 1/4" thick neoprene-jacketed precompressed molded fiberglass noise isolation pads.

(4) "L" Mounts - Type FRS freestanding, unhoused stable spring mounts, similar to type FDS, except incorporating vertical limit stops.

(5) "H" Hangers - Type SFH combination spring and fiberglass hangers, incorporating 2" thick neoprene-jacketed pre-compressed molded fiberglass inserts in series with springs, all encased in welded steel brackets.

(6) "B" Bases - Type SRB or SBB structural steel rail or beam bases, designed and supplied by the isolator manufacturer.

(7) "I" Bases - Type CIB reinforced concrete inertia bases, the steel members of which are designed and supplied by the isolator manufacturer. The concrete shall be poured into a welded steel channel frame, incorporating pre-located equipment anchor bolts and pipe sleeves, welded-in 1/2" diameter reinforcing bars of 8" centers each way, and isolator brackets to reduce the mounting height of the equipment.

(8) Installation shall be in accordance with manufacturer's instructions.

Other Acceptable manufacturers - Mason Industries, Korfund.

2.03 FLEXIBLE CONNECTORS

A. Furnish and install flexible connectors at all pipe connections to rotating or reciprocating equipment.

B. Flexible connectors shall be manufactured by Keflex Inc.

C. Twin, sphere, floating flange type.

D. Characteristics shall be as follows:

(O.A.) Pipe Size	Length	(@ 70°F) Max. W.P.	(Inches) End Max. Offset	Conn.
3/4"	11"	675	0.50"	MPT
1"	12"	550	0.25"	MPT
1- 1/4"	13"	510	0.50"	MPT
1- 1/2"	14"	450	0.50"	MPT
2"	15"	435	0.50"	FLG
2- 1/2"	16"	350	0.25"	FLG
3"	17"	325	0.25"	FLG
4"	19"	270	0.50"	FLG
5"	20"	200	0.50"	FLG
6"	21"	185	0.50"	FLG

E. Flexible connectors shall be braided stainless steel annular close pitch hose with stainless steel braid. M.P.T. ends shall be carbon steel. Flange ends shall be 150 lb. rated conforming to ANSI B16.5.

2.04 ESCUTCHEONS

A. This Contractor shall provide escutcheons on all exposed pipe wherever they pass through floors, ceilings, walls or partitions.

B. Escutcheons for pipes passing through outside walls and floor shall be Ritter Pattern and Casting Co., or approved equal, No. 1 solid, cast brass, flat type secured to pipe with set screws.

C. Escutcheons for pipes passing through interior walls, partitions, and ceiling shall be Ritter Pattern and Casting Co., or approved equal, No.1, solid, cast brass chromium plated type, secured to pipe with set screws.

D. Escutcheons for pipes is unfinished areas shall be cast iron, secured with set screws.

2.05 TRAPS

A. Each fixture and piece of equipment requiring connection to the drainage system shall be separately trapped by means of a water seal trap placed as close to the fixture as possible.

B. All running traps on drains, etc., shall have inlet handhole cleanouts and brass plug cleanouts in bottom. Cast iron trap in ground shall have bottom plug omitted. All exposed P traps shall have bottom cleanouts and shall be chromium plated cast brass.

2.06 TRENCH DRAINS

A. 12" wide, extra-heavy duty, segmented polymer concrete body with secured ductile iron slotted grade. Provide with neutral channel, 6" outlet and end caps.

B. J.R. Smith "Channel Brute" model 9828.

C. Modify outlet with reducer to 4" for connection to existing storm drain piping.

2.07 DISSIMILAR METALS

A. Connections between pipe, fittings, hangers and equipment of dissimilar metals shall be avoided.

B. Dielectric unions or insulated couplings shall be installed between copper or brass piping material and steel piping material or steel tanks. Unions or insulated couplings shall be used for pipe sizes 2" and smaller, and dielectrically gasketed flanges and sleeves for pipes 2- 1/2" and larger.

C. Pipes, fittings, hangers, etc., of dissimilar metals shall be insulated against direct contact one with the other, by using a high quality or grade of dielectric insulating material EPCO or approved equal.

2.08 UNIONS

A. Where required: on inlet and outlet of all apparatus and equipment having connections 2" and smaller. Where valves are adjacent to equipment, unions shall be on downstream side of valves.

B. Type

1. Steel piping: Malleable iron, 300 lb. WOG female pattern, brass seat, ground joint.
2. Cooper tubing: Ground joint, cast iron, 150 lb. WOG pattern.
3. For piping over 2" flanged joints to be used.
4. Gaskets shall be 1/16" thick similar to Garlock or Cranite factory cut, one piece.

2.09 ACCESS LADDER (FOR FIRE PROTECTION CONTROL VALVES)

A. Galvanized steel ladders with 2" x 3/8" side bars spaced 14 inches apart, 5/8" rungs spaced 12" on centers, fastened to construction, top and bottom.

B. Required where fire control valves are located over 7 feet above floor.

C. Ladders shall conform to O.S.H.A. requirements.

2.10 FIXED AIR GAPS

A. Provide where indicated on the Drawings and required by Code a fixed air gap to prevent contamination due to back flow in the stationary drain line. Air gap shall be J.R. Smith or approved equal No. 3951 to suit piping installation. Finish shall match connection.

2.11 FERRULES

A. Provide best quality ferrules of "Extra Heavy" cast brass, and of weight and sizes as follows:

Size	Minimum Length	Weight in Pounds
2 inch	4-1/2 inch	1.00
3 inch	4-1/2 inch	1.75
4 inch & Larger	6 inch	2.50

2.12 PIPELINE AIR GAPS

A. Pipeline air gaps must assure against back-siphonage by overflowing. Units shall be installed in water makeup lines to vessels under atmospheric pressure only. Air gap of unit must be at least twice the pipe diameter of the pipe in which it is installed.

2.13 THRUST BLOCKS

A. This Work shall cover the installation of concrete thrust blocks as shown on the plans or as required.

B. Thrust blocks shall be composed of concrete aggregated meeting ASTM Specification C-33 and Portland Cement meeting ASTM Specification C-150 Portland Cement or C-175 for Air Entrained Portland Cement. Mix shall not be leaner than 1 cement, 2-1/2 sand, 5 stone, having a compressive strength of not less than 2000 psi in 36 hours when using high early cement and 7 days when using standard cement.

C. Thrust blocks shall be applied or ordered at bends, tees and hydrants were changes in pipe diameter occur at reducers in fittings.

D. Thrust blocks shall be placed between solid ground and the fittings to be anchored. The area of bearing on fitting and on ground in each instance shall be that required by the Commissioner. The concrete shall be placed so that the pipe and fitting joints will be accessible for repair unless otherwise directed by the Commissioner. Install one (1) layer of tar on all surfaces that will come in contact with concrete pour.

2.14 TIE-RODS

A. Provide tie-rods for the site water main.

B. Tie-rods shall comply with NFPA, Chapter 24, Appendix A Specification and pipe manufacturer's recommendations.

C. Special consideration shall be given at the service entrance to the building. Provide auxiliary ties to the foundation wall, to equalize building and pipe movement.

2.14 HEAT TRACING

A. UL listed, self-regulating, 208V single phase.
B. Raychem XL-Trace 5XL2-CR with required accessories.
C. 16 AWG copper bus, 5 Watts per foot.
D. For water piping subject to freezing

PART 3.00 - EXECUTION

Not Used.

END OF SECTION

SECTION 22 40 00

PLUMBING FIXTURES

PART 1.00 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this specification as shown or specified should be in accordance with the requirements of the Contact Documents, General Conditions, Supplementary Conditions and Division 1 - General Requirements.

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to provide plumbing fixtures as shown on the drawings and as specified herein.

1.03 RELATED WORK

A.	Pipe, Tube and Fittings	-	Section 221000
B.	Facility Sanitary Sewerage	-	Section 221300
C.	Facility Water Distribution	-	Section 221100

1.04 CODES AND STANDARDS

A. Comply with applicable portions of: the Building Code of the City of N.Y.; Local Law No. 58 of 1987; ANSI Code; Local Law 29 of 1989; N.Y. State Department of Environmental Conservation Law performance standards specified in Section 15-0314, including all administrative decisions.

1.05 QUALITY ASSURANCE

A. References: ANSI:
   1. A112.6.1M "Supports for Off-The-Floor-Plumbing Fixtures for Public Use".
   2. A112.19.1M "Enameled Cast Iron Fixtures".
   3. A112.19.2M "Vitreous China Plumbing Fixtures".
   4. A112.19.3M "Stainless Steel Plumbing Fixtures".
   5. A112.19.5M "Trim for Water Closet Bowls, Tanks and Urinals".
   6. A112.18.1M "Finished and Rough Brass Plumbing Fixture Fittings".

B. All fixture trimmings, including faucets, strainers, escutcheons, shower head and arm, water closet supplies, stops, waste trap, escutcheons, visible hanger or chair carrier nuts shall be made of brass and shall be polished chromium plated. All material to be specified as chromium plated and shall be thoroughly and evenly applied and guaranteed not to strip or peel. All chromium plating on plumbing fixture trim shall be in accordance with Federal Spec. WW-P-54 lb for grade "R" plating. Manufacturer shall submit certification that all chrome plating on finished trim meets aforementioned Federal Specification. All plated work shall be highly buffed. Plastic, zinc or white metal will not be approved.

C. All fixtures shall be free from imperfections, true as to line, angles, curves and color, smooth, watertight, nameplate in every respect and practically noiseless in operation. Fixtures as specified are given as a typical standard and they or other approved fixtures shall be furnished, set and connected in good substantial, neat and workmanlike manner.

D. Fixtures: vitreous china ware of the best quality, non-absorbent and manufactured so that the whole mass is thoroughly fused and vitrified, producing a material white in color which, when fractured, will show a homogeneous mass, close grained and free from pores. The glazing and vitreous china fixtures shall be thoroughly fused and united to the body, without discoloration, chips, or flaws, and shall be free from craze. Warped or otherwise imperfect fixtures will not be acceptable.

E. Each supply fixture, casework fixture and equipment, shall be separately controlled by its own stops. Locate as required on wall, above floor or as directed.

F. All faucets shall have metal handles. Shower valves shall have integral check stops on both hot and cold water supplies.

G. All trim shall be permanently stamped with manufacturer's identification and shall be visible after installation.

H. Colors and finishes shall be selected by the Commissioner.

1.06 SUBMITTALS

A. Fixtures.

B. Fittings and Faucets.

C. Shower equipment.

D. Fixtures literature and product data.

E. Submit samples consisting of two pieces of each piece of brass work (fitting-trimming-etc.) required in connection with plumbing fixtures and showers, etc., only if other than specified item.

F. Submit all the videotapes produced during the training. All tapes shall be labeled and turned over to the Authority's Representative within forty-eight (48) hours of training. Submit affidavit signed by the Custodian that all training has been conducted. Obtain receipt from the Authority that the tapes have been received.

1.07 INDEXING FAUCET HANDLES

A. All faucet handles shall be indexed to indicate type of water it will supply. Cold water faucet shall be indexed by a "C", "COLD", or be color coded blue. Hot water faucet shall be indexed by a "H", "HOT", or be color coded red. Tempered water shall be indexed by a "T" or be color coded white.

PART 2.00 - PRODUCTS

2.01 BASE BID MANUFACTURERS

A. Plumbing Fixtures:
1. American-Standard
2. Kohler
3. Crane
4. Eljer
5. Duravit
6. Elkay
7. Just
8. See Commissioner's specifications for acceptable manufacturers.

B. Flushometers:
1. Sloan
2. Coyne-Delany
3. Zurn

C. Brassware:
1. Kohler
2. Vola
3. McGuire
4. Speakman
5. Just
6. American Standard
7. Chicago Faucet
8. Elkay
9. Moen
10. See Commissioner's specifications for acceptable manufacturers.

D. Faucets:
1. Speakman
2. Chicago
3. American Standard
4. See Commissioner's specifications for acceptable manufacturers.

E. Water Closet Seats:
1. Olsonite
2. Beneke Corporation
3. Church
4. See Commissioner's specifications for acceptable manufacturers.

F. Fixture Carriers:
1. Jay. R. Smith Manufacturing Co.
2. Zurn Industries, Inc.
3. Josam
4. Ancon, Inc.
5. Wade Division, Tyler Pipe & Foundry Co.

2.02 FIXTURES

A. Vitreous china, color as specified by commissioner, except as noted.

B. Stainless steel fixtures conforming to ANSI A112.19.3.

C. For all handicapped traps and supplies provide ADA conforming insulation kits: TruBro Handi Lav-Guard.

D. Provide suitable floor mounted heavy cast iron chair carrier for each wall-hung fixture. Lag all bolts to slab.

E. Unfinished surfaces of enameled iron fixtures: factory coat of paint.

F. Acid-Resisting (AR) Enameled Ware: labeled by manufacturer.

G. Water Closet:

1. P-1:

a. While vitreous china, wall hung, siphon jet, elongated bowl, flushometer type, 1 1/2" top spud, 1.6 gal. per flush (gpf).

b. Similar to Kohler Kingston No. K-4330 or approved equal.

c. Support: Concealed adjustable, heavy cast iron combination drainage fitting and chair carrier with anchor foot assembly. Lag to slab using all bolt holes. Similar to J.R. Smith series 0210 M51 horizontal and series 0230-M51 vertical.

d. Flushometer: Polished heavy-duty chrome plated brass, non-hold-open diagram type, vacuum breaker adjustable low consumption 1.1 and 1.6 gallons per flush unit. Similar to Sloan "Uppercut" Dual Flush WES-111.

e. Seat: White solid plastic, elongated, open front with stainless steel hinge pins, less cover. Similar to Church No. 9500C or approved equal.

H. Lavatories:

1. P-2:

a. 20" x 18" white vitreous china with single center faucet hole and with opening for concealed arm carrier and arid strainer.

b. Similar to Kohler "Soho Wall-Mount" K-2084-L.

c. Faucet: Similar to Kohler K-10952 Battery Powered single hole, high arc chrome plated.

d. Floor mounted concealed arm carrier with 3" x 1" uprights and baseplate lagged to slab.

I. Service Sink:

1. P-3:

a. Enameled cast iron service sink, 28" x 28" corner fixture.

b. Similar to Kohler Whitby k-6710, White.

c. Supply: Similar to Kohler K-8928 rough brass chrome plated mixing faucet with 3/4" hose, bracket, hose thread spout.

d. Drain: CP Grid type.

e. Caulk all junctions at walls.

J. Shower:

1. P-4:

a. Similar to Fiat "MFTR" (42"x32"), black and white.

b. Supply Fittings: Polished chrome plated brass, anti-scald, balanced pressure type similar to Kohler K-304-KS. Showerhead similar to Kohler Model K-10240.

2.03 CONNECTIONS

A. Exposed Pipe, Fittings, Traps, Escutcheons, Valves, Valve Handles and Accessories, Above and Below Fixtures:

1. CP brass.
2. Set screw CP cast brass escutcheons for piping and tubing.
3. Traps: CP cast brass with cleanouts plugs, unless otherwise noted.
4. Covering tubes not permitted.
5. CP type "L" tubing supply risers may be used.
6. Wall hung water closets: chair carriers.

2.04 FIXTURE FITTINGS

A. Renewable seats or replaceable internal units.
B. Composition washers.
C. All metal indexed handles.
D. Lockshield integral or built-in stops.
E. Finishes: As selected by Commissioner.

PART 3.00 - EXECUTION

3.01 SERVICES TO FIXTURES AND EQUIPMENT FURNISHED UNDER OTHER SECTIONS

A. The list of equipment for the project shall be reviewed by this Contractor, who shall include in the Contract price the costs for installing all equipment as herein specified and as claimed by the Trade Unions as Plumbing Work.

B. Refer to Architectural and Plumbing Drawings for exact locations of equipment and fixtures. Provide all materials, equipment and appliances necessary and required to complete the installation of all fixtures and equipment, including but not limited to the following: plumbing, roughing and final connections, valves, stops, trim, escutcheons, fittings, traps, etc. Install faucets, trim, etc., furnished with the equipment provided by others.

C. Unless otherwise detailed on Drawings, roughing of proper size and capacity for equipment indicated on Architectural, Heating and Ventilation, Plumbing or Electrical Drawings or provided under another Division or Section shall be provided and installed in such a manner and location that final connection can be made with a minimum of work and without cutting patching permanent walls, partitions, ceilings or floors. Drawings are by necessity, schematic, for special equipment as exact roughing and requirements may vary with different manufacturers.

3.02 INSTALLATION REQUIREMENTS

A. Make all plumbing connections to all equipment and fixtures requiring such connections as shown on Drawings whether the equipment and fixtures are furnished under this Section or other Divisions or Sections. Investigate the equipment furnished under other Divisions or Sections to determine if combination fittings have a means of shutoff or require the installation of check valves, backflow preventers and/or pressure reducing valves. Make final connections to such, including installations of all special traps, supplies, control valves, etc., furnished with such equipment, and furnish all material necessary that is not supplied with the equipment.

B. Provide valved water connections in equipment spaces and other locations where shown for the use of other trades or other Sections. On each valved outlet for equipment with submerged inlets, provide a backflow preventer after the shut-off valve. Funnel drains and/or floor drains for the air conditioning, heating and refrigeration work shall be provided.

C. Fixture supplies and traps as specified, shall be chrome plated cast brass, where exposed to view. Where concealed from view in cabinets, etc., they may be rough brass. All fixture supplies shall have stops.

D. As soon as installed, all metal fixture trimming shall be thoroughly covered by this Contractor with non-corrosive grease, which shall be maintained until all construction work is completed.

E. Upon the completion of the Work, all fixtures and trimmings shall be thoroughly cleaned and polished and free from all marks and left in first-class condition.

F. Upon completion of the Work, test flushometers and faucets for leaks or drips and adjust same for quiet and uniform operation.

G. All fixtures shall be left thoroughly clean. All plated or polished fittings, pipes and appliances shall be coated with Vaseline, immediately after installation, and shall be finally polished and free from all marks and foreign substances.

H. Equipment and all connections shall be in accordance with the rules relative to submerged inlets, and shall be provided with all necessary vacuum breakers and check valves, in accordance with the applicable codes.

I. Connection between any fixture with a floor outlet and the flange shall be made with an approved prepared gasket that shall be a germicide, absolutely gas and fume-proof, watertight, stain-proof, containing neither oil nor asphaltum, and which will not rot, harden or dry under any extreme of climate change, and must adhere on wet surfaces.

J. Each fixture shall be separately trapped, using the type and size of trap called for specifically in the Specifications, or the type required by the Plumbing Code. The traps shall be approved type.

K. All fixtures requiring hot and cold water shall have the cold water faucet on the right hand side of the fixture and the hot water faucet on the left hand side of fixture.

L. Be responsible for protecting against injury from the building materials, acids, tools and equipment, all plumbing fixtures, and equipment provided under Plumbing Work Sections.

M. No slip joints will be permitted on water piping.
N. Flexible supplies will not be permitted to fixtures in lieu of rigid supplies.
O. Furnish and install all control wiring from plumbing fixture transformers to sensors and solenoids per manufacturers' requirements.

END OF SECTION

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SECTION 23 05 00

COMMON WORK RESULTS FOR HVAC

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this section includes all labor, materials, equipment, hoisting and rigging, scaffolding and services necessary to complete the Heating, Ventilating and Air Conditioning Work as shown on the drawings and specified herein, including, but not limiting to, the following:

1. Garage exhaust systems including rooftop exhaust fans, air distribution ductwork, carbon monoxide controls and variable speed drives.
2. Garage make-up air systems including direct gas-fired make-up air units and air distribution ductwork.
3. Toilet exhaust system including rooftop exhaust fans and air distribution ductwork.
4. Map Room HVAC system including package air-cooled computer room type air conditioning units.
5. Air distribution systems, including sheet metal ductwork,
volume dampers, insulation and air outlets.
6. Electric cabinet unit heaters and unit heaters.
7. Vibration Isolation.
8. Automatic Temperature Controls.
9. Variable speed systems.
10. Acoustical Treatment.
11. Testing and balancing.

1.3 FEES AND PERMITS

A. The Contractor shall secure all permits and pay all fees required by local and state governing bodies necessary to complete the construction. Failure to investigate all applicable payments before the bid submission shall not constitute grounds for additional monies from the Commissioner. The Commissioner shall be furnished with all certificates of approval.

1.4 INSPECTIONS, PROGRESS INSPECTIONS, SPECIAL INSPECTIONS AND TESTING

A. The following inspections, tests, progress inspections and special inspections shall be considered part of the contract work.

B. Upon completion or partial completion of the permitted mechanical work, inspections, progress inspections, special inspections and tests shall be conducted by approved agencies or special inspectors qualified to conduct such inspections and tests. Inspections and progress inspections shall be performed in compliance with Section BC 109 of the New York City Building Code and Chapter 5000 of the New York City Energy Conservation Code (1 RCNY §5000-01). Special Inspections shall be performed in compliance with Sections BC 1704 and BC 1707 of the New York City Building Code for all mechanical systems regulated by the New York City Mechanical Code, Sections MC 107, MC 507, Chapters 10, 11 and 12. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code for additional provisions related to inspections.

C. Special Inspections of mechanical systems shall be performed by the City of New York and shall include the following as applicable to the system:

1. Visual certification that required components of such systems are complete in accordance with the manufacturers installation guidelines and the approved construction documents.
2. Supports, hangers, seismic bracing, and vibration isolation equipment are properly spaced and anchored to supporting structure.
3. Installation of required signage and safety instructions.
4. Electrical components are installed and electrical sign-off issued.
5. Ventilation balancing report is complete and in accordance with design documents.
6. Required labeling, operational instructions and safety signage properly posted.
   a. All related Special Inspections for such systems are complete.
   b. Noise producing exterior mechanical equipment located within 100 feet of habitable room windows shall be tested at the equipment for compliance with the design STC rating of the equipment and Section MC 926 of the New York City Mechanical Code and the New York City Noise Control Code.
   c. Required fire and smoke dampers are installed and functioning properly.

D. Progress inspections of mechanical systems shall include the following as applicable to the system:
   1. Through-penetration fire stopping.
   2. Fire dampers.
   3. Energy code compliance with approved construction documents in accordance with Chapter 5000 of the New York City Energy Conservation Code (1 RCNY §5000-01).

E. Tests of mechanical systems shall be performed in accordance with the following New York City Building Code and New York City Mechanical Code Sections:
Section MC 1108 Refrigeration

F. The following is a list of all required Special Inspections:

Special Inspection Item	Code/Section
Mechanical Systems	BC 1704.15
Firestop, Draftstop, and Fireblock Systems	BC 1704.25

G. The following is a list of all required progress inspections:

Progress Inspection Item	Code/Section
Fire-resistive rated construction	BC 109.3.4
Energy code compliance and	BC 109.3.5 ECC Chapter 5000

H. Upon completion of all special inspections, testing and building department sign-off, the mechanical contractor shall secure all certificates of compliance for the following service equipment and transmit same to commissioner:
   1. Air conditioning and ventilation systems.

1.5 GUARANTEE

A. In addition to the requirements stated in the specifications, the Contractor must guarantee all equipment, materials and appurtenances installed by him to be free from all defects. Upon written notice from the Commissioner, the Contractor shall promptly correct all defects without additional cost to the Commissioner. The Contractor must make good, at his own expense, any defects in materials or workmanship that may appear. The guarantee period shall be from one (1) year after final inspection and acceptance of the project.

B. An extended warranty shall be provided for the following equipment covering the cost of all parts and equipment.
   1. Compressors, 5 year extended.
   2. Burners,4 years extended

PART 2 PRODUCTS

2.1 PRODUCT HANDLING

A. In addition to the requirements of the General Conditions, the Contractor shall be responsible for the following:
   1. Responsibility for care and protection of mechanical work rests with the Contractor until it has been tested and accepted.
   2. After delivery, before, during and after installation, protect equipment and materials against theft, injury and damage for all causes.
   3. Coat polished or plated metal part with Vaseline immediately after installation.
   4. Protect equipment outlets and pipe, openings with caps.

B. Insulation and acoustic material within air handling equipment, fan coil units, VAV boxes, etc. can absorb damaging moisture and become soiled when shipped and if left outdoors prior to being installed. Absorbed moisture can foster biological growth and can lead to indoor air quality problems at a later date. To minimize damage all such equipment shall be shrink-wrapped prior to shipment from the factory. The shrink-wrap shall only be removed once the units have been move into enclosed spaces within the building.

C. The Contractor shall receive, properly house, handle, hoist, deliver to proper location, equipment and other materials required for the contract.

D. In the event of damage, immediately make all repairs and replacements necessary for the approval of the Commissioner and at no additional cost to the City of New York.

2.2 MATERIALS

A. Design:
   1. Unless otherwise specified, equipment or material of same type or classification, used for the same purpose, shall be products of the same manufacturer. All material shall be new and of the latest design of manufacturer providing equipment or materials.
   2. Equipment and accessories not specifically described or identified by manufacturer's catalog numbers shall be designed in conformity with ASME, or other applicable technical standards, suitable for maximum working pressure and shall have neat and finished appearance.

B. Electrical Characteristics:
   1. It shall be the responsibility of this Contractor to ensure that the voltage and current characteristics of the electrical equipment furnished by him shall be suitable for the electrical services as specified.

C. Lubricating Devices:
   1. Provide oil level gauges, grease cups, grease gun fittings for machinery bearings as recommended by machinery manufacturer; where lubricating means are not easily accessible, extend to accessible, extend to accessible locations. Furnish all grease gun fittings of uniform type.

D. Belt Guards:
   1. Provide guards to enclose belts, pulleys, sheaves or belt-driven equipment. Construct of galvanized expanded or perforated sheet steel, or 1" mesh wire screen in angle frame with steel angle or channel mounting supports; make guard easily removable for access to belt, pulley or sheave. Conform to codes or regulations of agencies having jurisdiction. Provide access holes for tachometers.

PART 3 EXECUTION

3.1 SUPERVISION

A. All work shall be preformed by competent mechanics under supervision of an experienced erection supervisor. The Contractor shall, upon initiation of construction, keep a suitable force of men (including supervisory personnel) on the site at all times in order to place all sleeves, inserts, outlet boxes and fixtures, and provide all other openings as are required for the satisfactory installation of equipment.

3.2 COORDINATION

A. Contractor's attention is directed to scheduling of construction and time limitations for each phase of the work. Work shall be coordinated to permit proper setting of the work of other trades.

B. Where piping work and appurtenances are in place prior to completion of adjacent concrete and masonry work, they must be protected against damage and displacement until construction is completed.

3.3 CUTTING AND PATCHING

A. All cutting and patching associated with the installation of the HVAC work is the responsibility of the Contractor.

B. No cutting of bearing walls, beams, etc. shall be done without the approval of the Commissioner. All materials, patching and finishing, etc. shall match the surroundings. All cutting and patching shall be done by workman skilled in the trades and in the employ of the Contractor for the project. All cutting shall be done with the saw-type edges to give a neat and workmanlike appearance. All pipe holes shall be core drilled unless specified otherwise.

3.4 TEMPORARY OPENINGS

A. All necessary temporary openings not indicated which may be required for purpose of bringing equipment into building shall be provided as required subject to the approval of the Commissioner. The Contractor shall perform work of providing and maintaining openings and of restoring structure.

B. Holes provided in General Construction work to permit installation of lines for temporary mechanical services shall, after removal of such lines, be patched as specified.

3.5 CLEAN-UP

A. The Contractor shall be held responsible for the general clean-up of all areas affected by the work in the Contract. All rubbish and accumulative material shall be removed from the premises and the premises left "broom clean" upon completion.

3.6 CLEARANCE FROM ELECTRICAL EQUIPMENT

A. Piping or Ductwork: Prohibited in electric room and closets, telephone rooms and closets, elevator machine rooms, and shall not be installed within 5 feet of transformers, substations, switchboards, motor control center, standby power plant, motors.

B. If 5 foot minimum is totally unavoidable, provide sleeve drained outside of electrical equipment room where approved by Commissioner. In no case however, shall piping or ductwork be installed above electrical equipment described above.

3.7 TESTING, ADJUSTING AND BALANCING

A. Make all required adjustments to air or hydronic system devices until all specified performances are met. Prior to testing clean and comb all coils as required. Before commencement of construction, test existing equipment to establish output, etc. Submit certified reports indicating outlet cfm, motor and compressor amperage draw, rpm, static pressure, outdoor temperature at time of test, return air, mixed air, discharge air and setting of all controllers.

B. Air and water system balancing shall be performed by an organization specializing in system balancing and procedures having at least five (5) years' experience and shall be Associated Air Balancing Council certified.

3.8 SUPPORTS AND STANDS

A. Where supports, stands and suspended platforms for machinery, tanks or other equipment are indicated or specified in mechanical work sections, perform as follows:

1. Design and construct supporting structures of strength to safely withstand stresses to which they may be subjected, and to distribute properly the load and impact over building areas. Conform to applicable technical societies' standards, also to codes and regulations of agencies having jurisdiction.
2. Locate supports for tanks so as to avoid undue strain on shell and interference with pipe connections to tank outlets.
3. For tanks containing tubes, check support locations for clearances to pull tubes.
4. Mount power-driven equipment on common base with driver, unless otherwise indicated, specified or approved.
5. Submit detailed shop drawings of all supports; obtain approval before fabricating and constructing.
6. Roof-mounted equipment shall be on prefabricated curbs unless indicated otherwise. Curbs for use with air intakes and relief or exhaust shall be of the insulated double shell type (refer to equipment sections). Equipment mounting rails shall be fabricated of 12 gauge, all welded, galvanized steel. Rails shall be 10" high with bottom raised cant, 2" x 4" treated wood nailer on top and a galvanized counterflashing cap. Rails shall be of adequate strength to handle the equipment weight.

B. Floor Stands:

1. Unless otherwise indicated, where equipment is indicated or specified to floor mounted on stands or legs, construct of structural steel members or steel pipe and fittings; brace and fasten with flanges bolted to floor.

C. Suspension Support for Ducts, Pipes, Equipment:

1. Unless otherwise indicated, all pipes, ducts and equipment that are suspended shall be connected directly to the building steel. Where hangers are required between building steel points, supplementary steel members shall be added by the Contractor as required to adequately support the load.
2. Pipes or ducts shall not be supported from other pipes, ducts or equipment.

3.9 PAINTING AND FINISHING

A. Except as specified herein, the finished painting of Mechanical Work within the building and on the roof shall be as specified in Architectural Drawings and Specifications.

B. All mechanical equipment shall have a factory applied prime and finish coat of paint. Galvanized surfaces shall be considered as finished surfaces for equipment rooms and items concealed from view. Plastic products shall be acceptable without a finish coat of paint. All items of equipment marred or rusted, even thought factory finished, shall be repainted.

C. All welded pipe connections, supports and stands shall be painted with an approved rust inhibitor ("extend" by Permatex or approved equal) prior to insulating.

3.10 IDENTIFICATIONS

A. Piping System:

1. All piping systems shall be identified by the name of contents and the direction of flow in accordance with ANSI A13.1 (1981).
2. Name of contents and directional arrows shall be placed near each valve, on both sides of pipes passing through walls, on long pipe runs at 30-foot intervals.
3. Names of contents and directional arrows shall be laminated in plastic and wraparound pipe marker as manufactured by Seton Nameplate Co., Grainger, Compliance Signs, or approved equal.

B. Equipment:

1. All items of mechanical equipment such as fans, pumps, air handlers shall be identified by approved nameplates by Contractor furnishing equipment.
2. Nameplates shall be securely affixed to each individual piece of equipment and also to controls for that equipment.
3. Nameplates shall be aluminum 2 1/2" x 3/4 with black enamel back-ground etched or engraved natural aluminum lettering. Manufacturer shall be Seton Nameplate Company Naptags, NPI Printing and product identification, or approved equal.
4. Equipment shall be identified as to its type and unit number.

C. Valves:
1. Identify valves and other parts of mechanical systems by means of polished and lacquered bras or aluminum tags, minimum 1 1/2" round or octagonal, with stamped letters and number 1/2" high and filled with black paint. Tag must bear name of particular mechanical system involved and identifying number.

D. Charts:
1. Charts of valves including valve identification number, location and purpose shall be furnished in duplicate.
2. Charts of piping system identification shall be furnished in duplicate. Charts shall include the following:
   a. Service
   b. Color field
   c. Legend
   d. Color of letters
3. One (1) copy of each chart shall be mounted in a wood frame with clear glass front, and secured to wall, as directed.
4. Second chart shall be prepared for use in location as directed, provided with approved transparent plastic enclosure for permanent protection. Two (2) holes shall be furnished at top of plastic enclosure to allow for affixing an 8" length of nickel-plated bead chin. Each hole to be reinforced by a small brass or nickel grommet. Plastic enclosures as furnished by Seton Nameplate Company, Grainger, Compliance Signs, or approved equal.

3.11 FIRE-STOP PROTECTION

A. Where pipes and conduit pass through fire partitions, fire walls or floors, install a firestop that provides and effective barrier against the spread of fire, smoke and gases. Fire-stop material shall be packed tight, and completely fill clearances between pipe and sleeves. Provide escutcheon plates on both sides of all rated construction.

B. Fire-stopping material shall maintain its dimension and integrity while preventing the passage of flame, smoke and gases. Fire-stopping material shall be non-combustible as defined by ASTM E136.

3.12 ACCESS PANELS

A. The Contractor shall furnish access panels for the installation by the Contractor for General Construction for concealed valves, expansion joints, valves, traps, strainers, dampers and other parts requiring accessibility for operation and maintenance.

B. Access panel size shall be as indicated; when not indicated, make 18" x 18" minimum or larger as directed or required.

C. Frames shall be 16 gauge steel.

D. Access panels for use on masonry, tile, drywall shall have frames with flanges to hide rough openings in walls. Style M as manufactured by Milcor, Acudor, Karp or approved equal.

E. When access panels or doors are installed in fire-rated construction they shall be fire rated to match the construction.

3.13 ELECTRICAL WIRING DIAGRAMS

A. Electrical wiring for automatic temperature, safety an interlocking controls for motors, motor starters and other electrical apparatus and devices shall be provided by this Contractor, except for wiring of fractional horsepower fan motors which shall be by the Electrical Contractor. Power wiring will be under another Division.

B. Prepare and submit for approval terminal point to terminal point completely coordinated and integrated wiring diagrams for all wiring.

C. Submit specific wiring diagrams or factory-installed equipment wiring.

3.14 TEMPORARY SERVICE

A. Temporary services are specified under "General Conditions".

End of Section

SECTION 23 05 13

COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS
A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to complete the Electric Motors, Motor Controllers as shown on the drawings and as specified herein, including but not limited to the following:
1. Furnish and install motors required for mechanical equipment. All motors 1 HP and above shall be Premium Efficiency Motors.
2. Furnish motor starters required for mechanical equipment.
3. Coordination of the installation of motors and starters.
4. Motor control devices required for mechanical equipment.
5. All control wiring other than power wiring.

1.3 RELATED WORK
A. HVAC equipment.
B. Automatic Temperature Controls.
C. Electrical specifications for installation of motor starters and power wiring.

1.4 QUALITY ASSURANCE
A. NEMA
B. NEW YORK CITY ELECTRICAL CODE
C. IEEC

1.5 SUBMITTALS
A. Shop Drawings:
1. Wiring diagrams of all manufactured equipment.
2. Electrical equipment terminal-to-terminal point connections.
3. Elementary diagrams.
4. Integrated and coordinate wiring for automatic temperature, safety and interlocking controls for motor starters and motor actuating and actuated devices.
B. Materials Data: Manufacturer's printed data, test data, recommendations and installation.

1.6 DEFINITIONS
A. Power Wiring (Motor Power Circuit): Power circuit operating at 120 volts or more, and carries electrical input energy to starter and from starter to motor.
B. Control Wiring (Motor Control Circuit): Other than power wiring, all other wiring intended for directing or indicating the performance of a motor starter, including connections to actuating and actuated devices.

C. Motor Actuating Device: Any device performing a switching function in a motor control circuit (i.e., pushbuttons, hand-off-automatic switches, automatic contacting devices, time clocks, etc.).

D. Motor Actuated Device: Any device which functions in response to voltage received from a motor control circuit (i.e., pilot lights, solenoids, PE, EP, damper motors, etc.).

PART 2 MATERIALS

2.1 MOTORS

A. General:

1. Motors shall be of proper power and speed to suit the specified makes of equipment. If other makes of equipment (other than specified) are accepted, the proper adjustment of motor speed and power must be included without additional cost. Sizes and types shall be submitted for approval before the equipment is purchased.
2. Motors shall be open dripproof, squirrel cage induction motors rated at 1,750 rpm or 3,500 rpm, as scheduled. Where motors are multi-speed, speeds shall be as scheduled.
3. Motors voltage shall be as scheduled.
4. Unless otherwise specified, motors shall be suitable for operation in either direction of rotation.
5. Unless otherwise indicated, motors shall have a service factor of 1.15.
6. Motors, shall be built in accordance with current NEMA standards (MG-1), except as noted in these specifications.
7. Motors shall be NEMA Design B unless otherwise noted.
8. Fractional horsepower motors less than ½ HP shall be 120 volt, single phase, 60 Hz. Motors ½ HP and above shall be 60 Hz, three phase with voltage as scheduled.

B. Insulation

1. Insulation system employed shall have been tested by the manufacturer and will be Class H (180°c).
2. Temperature rise shall be in accordance with NEMA limits for the Class of Insulation, Service Factor and Enclosure specified.
3. Unless noted otherwise, motors will be rated for 40 degrees C ambient operation.

C. Mechanical:

1. Motors shall be built in NEMA standard T-Frame sizes.
2. Dripproof and totally-enclosed motor frames will be of rugged construction and material will be steel, aluminum or cast iron.
3. End bracket will be of cast iron or aluminum construction and aluminum must have steel inserts in the bearing relubrication.
4. Bearings will be anti-friction type and bearing housings will be equipped with plugged provision for relubrication.
5. Bearings will be rated for minimum L-10 life of 20,000 hours assuming bearing load to be calculated with a NEMA minimum V-belt pulley, so located that the center line of the belt load will be located at the end of the NEMA standard shaft extension.

D. Premium Efficiency Motors:

1. Provide premium efficiency electric motors for all polyphase dripproof and totally enclosed motors 1 HP and above. Motor shall have a standard product of an approved motor manufacturer and shall have the following minimum guaranteed full load efficiencies at 1,750 rpm. Submit certification of motor efficiency with equipment shop drawings. Motors for different rpm's shall be of same construction and comparable efficiency at 1,750 rpm motors.

OPEN DRIP - PROOF (ODP)			
Motor Size (HP)	Speed (RPM)		
	1200	1800	3600
	NEMA Nominal Efficiency		
1	82.5%	82.5%	77.0%
1.5	86.5%	86.5%	84.0%
2	87.5%	87.5%	85.5%
3	88.5%	89.5%	85.5%
5	89.5%	89.5%	86.5%
7.5	90.2%	91.0%	88.5%
10	91.7%	91.7%	89.5%
15	91.7%	93.0%	90.2%
20	92.4%	93.0%	91.0%
25	93.0%	93.6%	91.7%
30	93.6%	94.1%	91.7%
40	94.1%	94.1%	92.4%
50	94.1%	94.5%	93.0%
60	94.5%	95.0%	93.6%
75	94.5%	95.0%	93.6%
100	95.0%	95.4%	93.6%
125	95.0%	95.4%	94.1%
150	95.4%	95.8%	94.1%
200	95.4%	95.8%	95.0%

TOTAL ENCLOSED FAN-COOLED (TEFC)			
Motor Size (HP)	Speed (RPM)		
	1200	1800	3600
	NEMA Nominal Efficiency		
1	82.5%	85.5%	77.0%
1.5	87.5%	86.5%	84.0%
2	88.5%	86.5%	85.5%
3	89.5%	89.5%	86.5%
5	89.5%	89.5%	88.5%
7.5	91.0%	91.7%	89.5%
10	91.0%	91.7%	90.2%
15	91.7%	92.4%	91.0%
20	91.7%	93.0%	91.0%
25	93.0%	93.6%	91.7%
30	93.0%	93.6%	91.7%
40	94.1%	94.1%	92.4%
50	94.1%	94.5%	93.0%
60	94.5%	95.0%	93.6%
75	94.5%	95.4%	93.6%
100	95.0%	95.4%	94.1%
125	95.0%	95.4%	95.0%
150	95.8%	95.8%	95.0%
200	95.8%	96.2%	95.4%

E. Noise Levels:
   1. Sound power levels for all motors will be no greater than the guidelines recommended by NEMA (MGI-12.49).

F. Tests and Test Data:
   1. Motors will be 100% production tested and quality control checked to assure compliance with this specification.
   2. The insulation system will be tested by procedure outlined in NEMA MGI-12.03.
   3. A load test will be performed on each motor to assure compliance with the energy-efficient section of this specification.
   4. Typical test data on each motor will be available if requested.

2.2 MOTOR STARTERS

A. Fractional Horsepower Starters for Motors less than ½ HP:

1. Thermal overload relay with field adjustment capability.
2. NEMA 1 general purpose enclosure with flush mounted enclosure and plate.
3. Quick-mate, quick-break mechanism.
4. Pilot light indicating activation.
5. Speed control, where indicated.
6. Magnetic starter type with HOA switch where required to be automatically controlled by a motor actuating device.

B. Starter for Motors ½ HP and Above:

1. Combination magnetic starter with unfused, disconnect switch, unless indicated to be fused, or of the circuit breaker type.
2. Provide an individually fused transformer to permit external control circuit operation at a nominal voltage of 120 volts. Ground unfused secondary wire.
3. Provide NEMA I Class A enclosure with running overload relay and disconnect for each pole.
4. Size fusible switch gaps for time delay type fusing. For combination circuit breaker. Provide ambient compensating features extending to 50°C.
5. Magnetic Starters NEMA Size 3 and Larger: Equipped with an auxiliary control circuit relay arranged to permit the actuation of the starter without introducing holding coil currents into the external control circuit.
6. Magnetic Starters NEMA Size 5 and Larger, Intended to Operate at a Power Circuit Voltage in Excess of 250 Volts Line-to-Line: Equipped with an integral phase failure protection relay system.
7. Equip starter with a low voltage, manual reset "lockout" relay arranged to open the main holding coil circuit following a loss of line voltage, and then to maintain it open (pending manual reset) regardless of maintained contact features (if any) in the external control circuit.
8. Covers and Combination Starters: Suitably hinged and interlocked with the handle of the disconnect means to prevent opening when the handle is in closed position.
9. Combination Type Motor Starters: Equipped with approved padlock and key and a means for padlocking its manual line disconnect in the open position.
10. Motor Starters: Equipped with an engraved lamicoid nameplate permanently fastened on the outside of the starter cover, with high white lettering on a black background identifying the motor and system controlled.
11. In addition to auxiliary contacts required for interlocking or indicating purposes, provide magnetic starters with one normally closed and one normally open additional contacts for future use.
12. Enclosure Sizes and Wiring Terminals of Motor Starters: Suitable for the application of copper power and control circuit wires.
13. Motor Starters which are not part of Packaged Equipment: One manufacturer throughout the project.

14. Wire all starter control wires for external connection including spare auxiliary contacts to terminal blocks. Each terminal block point be identified with unique number shown also on submitted wiring diagrams.

2.3 MOTOR CONTROL DEVICES

A. Furnish mount and wire up manual control actuating devices and pilot lights required in starter covers.

B. Motor Control Devices in the Starter Covers: Housed in NEMA Class I general purpose enclosures, except that where intended for use in damp or hazardous locations, provide enclosures of the proper NEMA classification for the conditions. Gang together in a single enclosure and wired up to a terminal block two or motor control actuating or actuated devices at a single location.

C. Contacts for Motor Control Devices: Rated at not less than 10 amperes AC at 250 volts regardless of the actual duty they are required to perform.

D. Motor control devices shall be suitable for operation at 120 volts.

E. Pushbuttons: Heavy-duty oil-tight return momentary type. Provide flush mounted in stainless steel faceplate with pilot light and label indicating equipment served, where stations are remotely located.

F. Selector Switches: Heavy-duty oil-tight maintained contact type.

G. Pilot Lights: Heavy-duty type with resistor or transformer, equipped with nameplates indicating the operating condition they annunciate.

H. Devices such as pushbuttons, pilot light and selector switches, where mounted in enclosure other than the cover of the starter: Equipped with nameplates indicating the motor with which they are associated and their function (on-off, manual-automatic, etc.).

I. Nameplates: Engraved lamicoid, permanently fastened lettering and a black background.

2.4 APPROVED MANUFACTURERS

A. Motors: Badlor Premium Efficiency Super-E Motor, Lincoln, Gould, Century General Electric, Westinghouse, or approved equal.

B. Starters: Cutler-Hammer, Siemens, Square D, Allen-Bradley or approved equal.

2.5 VARIABLE FREQUENCY DRIVES

A. The VFD package as specified consisting of a pulse width modulated (PWM) inverter designed for use on a standard NEMA Design B induction motor, completely assembled and tested by the manufacturer in an ISO9001 facility. The VFD tolerated voltage window shall allow the VFD to operate from a line of +30% nominal, and -35% nominal voltage as a minimum.

1. Environmental operating conditions: 0 to 40°C (104 °F) continuous. VFD's that can operate at 40° C intermittently (during a 24 hour period) are not acceptable and must be oversized. Altitude 0 to 3300 feet above sea level, less than 95% humidity, non-condensing.

2. Enclosure shall be rated UL type 12 and shall be UL listed as a plenum rated VFD. VFD's without these ratings are not acceptable.

B. All VFDs shall have the following standard features:

1. All VFDs shall have the same customer interface, including digital display, and keypad, regardless of horsepower rating. The keypad shall be removable, capable of remote mounting and allow for uploading and downloading of parameter settings as an aid for start-up of multiple VFDs.
2. The keypad shall include Hand-Off-Auto selections and manual speed control. The drive shall incorporate "bumpless transfer" of speed reference when switching between "Hand" and "Auto" modes. There shall be fault reset and "Help" buttons on the keypad. The Help button shall include "on-line" assistance for programming and troubleshooting.
3. There shall be a built-in time clock in the VFD keypad. The clock shall have a battery back up with 10 years minimum life span. The clock shall be used to date and time stamp faults and record operating parameters at the time of fault. If the battery fails, the VFD shall automatically revert to hours of operation since initial power up. The clock shall also be programmable to control start/stop functions, constant speeds, PID parameter sets and output relays. The VFD shall have a digital input that allows an override to the time clock (when in the off mode) for a programmable time frame. There shall be four (4) separate, independent timer functions that have both weekday and weekend settings.
4. The VFD's shall utilize pre-programmed application macro's specifically designed to facilitate start-up. The Application Macros shall provide one command to reprogram all parameters and customer interfaces for a particular application to reduce programming time. The VFD shall have two user macros to allow the end-user to create and save custom settings.
5. The VFD shall have cooling fans that are designed for easy replacement. The fans shall be designed for replacement without requiring removing the VFD from the wall or removal of circuit boards. The VFD cooling fans shall operate only when required. To extend the fan and bearing operating life, operating temperature will be monitored and used to cycle the fans on and off as required.
6. The VFD shall be capable of starting into a coasting load (forward or reverse) up to full speed and accelerate or decelerate to setpoint without safety tripping or component damage (flying start).
7. The VFD shall have the ability to automatically restart after an over-current, over-voltage, under-voltage, or loss of input signal protective trip. The number of restart attempts, trial time, and time between attempts shall be programmable.

8. The overload rating of the drive shall be 110% of its normal duty current rating for 1 minute every 10 minutes, 130% overload for 2 seconds. The minimum FLA rating shall meet or exceed the values in the NEC/UL table 430-150 for 4-pole motors. The following table identifies the drive size and model number to be used with each motor and the drive Amp rating:

208 Volts		
HP	Type Code	Amps
1	ACH550-UH-04A6-2	4.6
1.5	ACH550-UH-06A6-2	6.6
2	ACH550-UH-07A5-2	7.5
3	ACH550-UH-012A-2	11.8
5	ACH550-UH-017A-2	16.7
7.5	ACH550-UH-024A-2	24.2
10	ACH550-UH-031A-2	30.8
15	ACH550-UH-046A-2	46.2
20	ACH550-UH-059A-2	59.4
25	ACH550-UH-075A-2	74.8
30	ACH550-UH-088A-2	88
40	ACH550-UH-114A-2	114
50	ACH550-UH-143A-2	143
60	ACH550-UH-178A-2	178
75	ACH550-UH-221A-2	221
100	ACH550-UH-248A-2	248

* Note: Drive rating and Amps based on ABB ACH550 VFD.

9. The VFD shall have an integral 5% impedance line reactors to reduce the harmonics to the power line and to add protection from AC line transients. The 5% impedance may be from dual (positive and negative DC bus) reactors, or 5% AC line reactors. VFD's with only one DC reactor shall add AC line reactors.

10. The VFD shall include a coordinated AC transient protection system consisting of 4-120 joule rated MOV's (phase to phase and phase to ground), a capacitor clamp, and 5% impedance reactors.

11. The VFD shall be capable of sensing a loss of load (broken belt / broken coupling) and signal the loss of load condition. The drive shall be programmable to signal this condition via a keypad warning, relay output and/or over the serial communications bus. Relay outputs shall include programmable time delays that will allow for drive acceleration from zero speed without signaling a false underload condition.

12. If the input reference (4-20mA or 2-10V) is lost, the VFD shall give the user the option of either (1) stopping and displaying a fault, (2) running at a programmable preset speed, (3) hold the VFD speed based on the last good reference received, or (4) cause a warning to be issued, as selected by the user. The drive shall be programmable to signal this condition via a keypad warning, relay output and/or over the serial communication bus.

13. The VFD shall have programmable "Sleep" and "Wake up" functions to allow the drive to be started and stopped from the level of a process feedback signal.

C. All VFDs to have the following adjustments:

1. Three (3) programmable critical frequency lockout ranges to prevent the VFD from operating the load continuously at an unstable speed.

2. Two (2) PID Setpoint controllers shall be standard in the drive, allowing pressure or flow signals to be connected to the VFD, using the microprocessor in the VFD for the closed loop control. The VFD shall have 250 ma of 24 VDC auxiliary power and be capable of loop powering a transmitter supplied by others. The PID setpoint shall be adjustable from the VFD keypad, analog inputs, or over the communications bus. There shall be two parameter sets for the first PID that allow the sets to be switched via a digital input, serial communications or from the keypad for night setback, summer/winter setpoints, etc. There shall be an independent, second PID loop that can utilize the second analog input and modulate one of the analog outputs to maintain setpoint of an independent process (ie. valves, dampers, etc.). All setpoints, process variables, etc. to be accessible from the serial communication network. The setpoints shall be set in Engineering units and not require a percentage of the transducer input.

3. Two (2) programmable analog inputs shall accept current or voltage signals.

4. Two (2) programmable analog outputs (0-20ma or 4-20 ma). The outputs may be programmed to output proportional to Frequency, Motor Speed, Output Voltage, Output Current, Motor Torque, Motor Power (kW), DC Bus voltage, Active Reference, and other data.

5. Six (6) programmable digital inputs for maximum flexibility in interfacing with external devices, typically programmed as follows:

   a. There shall be a run permissive circuit for damper or valve control. Regardless of the source of a run command (keypad, input contact closure, time-clock control, or serial communications) the VFD shall provide a dry contact closure that will signal the damper to open (VFD motor does not operate). When the damper is fully open, a normally open dry contact (end-switch) shall close. The closed end-switch is wired to an VFD digital input and allows VFD motor operation. Two separate safety interlock inputs shall be provided. When either safety is opened, the motor shall be commanded to coast to stop, and the damper shall be commanded to close. The keypad shall display "start enable 1 (or 2) missing". The safety status shall also be transmitted over the serial communications bus. All digital inputs shall be programmable to initiate upon an application or removal of 24VDC.

6. Three (3) programmable digital Form-C relay outputs. The relays shall include programmable on and off delay times and adjustable hysteresis. Default settings shall be for run, not faulted (fail safe), and run permissive. The relays shall be rated for maximum switching current 8 amps at 24 VDC and 0.4 A at 250 VAC; Maximum voltage 300 VDC and 250 VAC; continuous current rating 2 amps RMS. Outputs shall be true form C type contacts; open collector outputs are not acceptable.
7. Seven (7) programmable preset speeds.
8. Two independently adjustable accel and decel ramps with 1 - 1800 seconds adjustable time ramps.
9. The VFD shall include a motor flux optimization circuit that will automatically reduce applied motor voltage to the motor to optimize energy consumption and audible motor noise.
10. The VFD shall include a carrier frequency control circuit that reduces the carrier frequency based on actual VFD temperature that allows the highest carrier frequency without derating the VFD or operating at high carrier frequency only at low speeds.
11. The VFD shall include password protection against parameter changes.

D. The Keypad shall include a backlit LCD display. The display shall be in complete English words for programming and fault diagnostics (alpha-numeric codes are not acceptable). The keypad shall utilize the following assistants:
1. Start-up assistants.
2. Parameter assistants
3. Maintenance assistant
4. Troubleshooting assistant

E. All applicable operating values shall be capable of being displayed in engineering (user) units. A minimum of three operating values from the list below shall be capable of being displayed at all times. The display shall be in complete English words (alpha-numeric codes are not acceptable):
Output Frequency
Motor Speed (RPM, %, or Engineering units)
Motor Current
Calculated Motor Torque
Calculated Motor Power (kW)
DC Bus Voltage
Output Voltage

F. The VFD shall include a fireman's override input and shut down. Upon receipt of contact closures from the fireman's control station, the VFD shall operate at an adjustable preset speed or shut down. The mode shall override all other inputs (analog/digital, serial communication, and all keypad commands) and force the motor to run at the adjustable, preset speed. "Override Mode" shall be displayed on the keypad. Upon removal of the override signal, the VFD shall resume normal operation.

G. Serial Communications

1. The VFD shall have an RS-485 port as standard. The standard protocols shall be Modbus, Johnson Controls N2 bus, and Siemens Building Technologies FLN. Optional protocols for LonWorks, BACnet, Profibus, Ethernet, and DeviceNet shall be available. Each individual drive shall have the protocol in the base VFD. The use of third party gateways and multiplexers is not acceptable. All protocols shall be "certified" by the governing authority. Use of non-certified protocols is not allowed.

2. Serial communication capabilities shall include, but not be limited to; run-stop control, speed set adjustment, proportional/integral/derivative PID control adjustments, current limit, accel/decel time adjustments, and lock and unlock the keypad. The drive shall have the capability of allowing the DDC to monitor feedback such as process variable feedback, output speed / frequency, current (in amps), % torque, power (kW), kilowatt hours (resettable), operating hours (resettable), and drive temperature. The DDC shall also be capable of monitoring the VFD relay output status, digital input status, and all analog input and analog output values. All diagnostic warning and fault information shall be transmitted over the serial communications bus. Remote VFD fault reset shall be possible. The following additional status indications and settings shall be transmitted over the serial communications bus - keypad "Hand" or "Auto" selected, bypass selected, the ability to change the PID setpoint, and the ability to force the unit to bypass (if bypass is specified). The DDC system shall also be able to monitor if the motor is running in the VFD mode or bypass mode (if bypass is specified) over serial communications. A minimum of 15 field parameters shall be capable of being monitored.

3. The VFD shall allow the DDC to control the drive's digital and analog outputs via the serial interface. This control shall be independent of any VFD function. For example, the analog outputs may be used for modulating chilled water valves or cooling tower bypass valves. The drive's digital (relay) outputs may be used to actuate a damper, open a valve or control any other device that requires a maintained contact for operation. In addition, all of the drive's digital and analog inputs shall be capable of being monitored by the DDC system.

4. The VFD shall include an independent PID loop for customer use. The independent PID loop may be used for cooling tower bypass value control, chilled water value control, etc. Both the VFD control PID loop and the independent PID loop shall continue functioning even if the serial communications connection is lost. The VFD shall keep the last good set-point command and last good DO & AO commands in memory in the event the serial communications connection is lost.

H. EMI / RFI filters. All VFD's shall include EMI/RFI filters. The onboard filters shall allow the VFD assemble to be CE Marked and the VFD shall meet product standard EN 61800-3 for the First Environment restricted level.

I. All VFD's through 50HP shall be protected from input and output power mis-wiring. The VFD shall sense this condition and display an alarm on the keypad.

J. Bypass System

1. A complete factory wired and tested bypass system consisting of an output contactor and bypass contactor. Overload protection and shall be provided in both drive and bypass modes.
2. The following operators shall be provided:
   a. Bypass Hand-Off-Auto
   b. Drive mode selector
   c. Bypass mode selector
   d. Bypass fault reset
3. The following indicating lights (LED type) shall be provided. A test mode or push to test feature shall be provided.
   a. Power-on (Ready)
   b. Run enable (safeties) open
   c. Drive mode select damper opening
   d. Bypass mode selected
   e. Drive running
   f. Bypass running
   g. Drive fault
   h. Bypass fault
   i. Bypass H-O-A mode
   j. Automatic transfer to bypass selected
   k. Safety open
   l. Damper opening
   m. Damper end-switch made
4. The following relay (form C) outputs from the bypass shall be provided:
   a. System started
   b. System running
   c. Bypass override enable
   d. Drive fault.
   e. Bypass fault (motor overload or underload (broken belt))
   f. Bypass H-O-A position
5. Door interlocked, padlockable circuit breaker that will disconnect all input power from the drive and all internally mounted options.
6. VFD only disconnect (service switch). The drive / bypass shall provide single-phase motor protection in both the VFD and bypass modes.
7. The digital inputs for the system shall accept 24V or 115VAC (selectable). The bypass shall incorporate internally sourced power supply and not require an external control power source.

8. Customer Interlock Terminal Strip - provide a separate terminal strip for connection of freeze, fire, smoke contacts, and external start command. All external safety interlocks shall remain fully functional whether the system is in Hand, Auto, or Bypass modes (not functional in Fireman's Override 2). The remote start/stop contact shall operate in VFD and bypass modes.
9. Dedicated digital input that will transfer motor from VFD mode to bypass mode upon dry contact closure for fireman's override. Two modes of operation are required.
   a. One mode forces the motor to bypass operation and overrides both the VFD and bypass H-O-A switches and forces the motor to operate across the line (test mode). The system will only respond to the digital inputs and motor protections.
   b. The second fireman's override mode remains as above, but will also defeat the overload and single-phase protection for bypass and ignore all keypad and digital inputs to the system (run until destruction).
   c. The VFD shall include a "run permissive circuit" that will provide a normally open contact whenever a run command is provided (local or remote start command in VFD or bypass mode). The VFD system (VFD or bypass) shall not operate the motor until it receives a dry contact closure from a damper or valve end-switch. When the VFD system safety interlock (fire detector, freezestat, high static pressure switch, etc) opens, the motor shall coast to a stop and the run permissive contact shall open, closing the damper or valve.
   d. Class 20 or 30 (selectable) electronic motor overload protection shall be included.
   e. There shall be an internal switch to select manual or automatic bypass.
   f. There shall be an adjustable current sensing circuit for the bypass to provide loss of load indication (broken belt) when in the bypass mode.

K. Manufacturer Warranty
   1. Provide an extended warranty certified for two years for all parts and labor.

L. Factory Start-up
   1. Certified factory and on-site start-up shall be provided for each drive by a factory authorized representative. A certified start-up form shall be filled out for each drive with a copy provided to the commissioner, and a copy kept on file at the manufacturer.

M. Acceptable Manufacturers
   1. VFD shall be manufactured by ABB Automation Model ACH 550, Emerson Electric, Graham or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Coordinate with other work described under "Related Work".

B. Comply with the requirements of the New York City Electrical Code for the control wiring work.

C. Install in accordance with the equipment manufacturer's instructions.

D. Provide all control and interlock wiring for all provided HVAC equipment.

END OF SECTION

SECTION 23 05 48

VIBRATION AND SEISMIC CONTROLS FOR HVAC PIPING & EQUIPMENT

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS
A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to complete the Vibration Control and Seismic Restraint Work as shown on the drawings and specified herein, including, but not limited to, the following:
1. Package air-cooled air conditioning units
2. Gas-fired make-up air units
3. Exhaust Fans
B. Provide seismic restraint for all systems related to life safety as required by the New York City Building Code. This shall include:
1. Rooftop Units (Units provide smoke purge).
2. Return air/smoke exhaust ductwork.

1.3 RELATED WORK
A. HVAC Equipment.
B. Piping and Accessories.
C. Sheet Metal Ductwork.

1.4 QUALITY ASSURANCE
A. SMACNA, ASHRAE, NFPA.
B. New York City Building Code.

1.5 SUBMITTALS
A. Furnish shop drawings adequate concrete reinforcing steel details and templates for all concrete foundations and supports, and all required hanger bolts and other appurtenances necessary for the proper installation of equipment.
B. Include in the vibration isolation equipment submittal drawings the following information:
1. Isolation mounting deflections.
2. Spring diameters, compressed spring heights at rated load; solid spring heights, where steel spring isolation mountings are used.
3. Equipment operating speed.
C. Product Data: Manufacturer's printed data, test reports, catalog cuts and recommended method of installation.

PART 2 PRODUCTS

2.1 GENERAL

A. For the purpose of establishing design and quality, products are identified by several manufacturer's names and catalog numbers. The equivalent items of other manufacturers will be accepted, as approved by the Commissioner. Manufacturers are as follows:

1. Sound and Vibration Isolation:
   a. Mason Industries, Inc. - M.I.I.
   b. Vibration Eliminator Co. - V.E.C.
   c. Vibration Mountings & Controls, Inc. - V.M.C.I.
   d. Or approved equal.

B. Mounting Sizes: Determined by the mounting manufacturer.

C. Mounting systems, including piping isolator components of the isolation mounting, shall not be resonant with the forcing frequencies of the supported equipment or supporting structure.

D. Where equipment is located outdoors, vibration isolation equipment shall be weatherproof as required for operation in an exposed environment.

E. See specification and schedules for deflection and mounting type number.

2.2 MOUNTING OF CEILING-SUPPORTED FACTORY-ASSEMBLED, AIR CONDITIONING UNITS AND GAS-FIRED MAKE-UP AIR UNITS - MOUNTING TYPE 1 - SPRING ISOLATORS

A. Hang all such units by means of vibration isolator hangers consisting of a steel housing or retainer incorporating a steel spring and neoprene-in-shear absorbing elements. Isolators shall be provided with a minimum deflection of 1.25".

B. If the equipment to be mounted is not furnished with integral structural frames and external mounting lugs (both of suitable strength and rigidity), install approved structural subbase in the field which will support the equipment to be hung and to which will be attached the hangers.

C. Isolators to be one of the following, or as approved:

Type 30N	-	M.I.I.
Type RSH	-	V.M.C.I.
Type CSNC	-	V.E.C.

D. Provide thrust restraints on the discharge of all fans with a total static pressure of 2" and greater. Restraints shall be Mason Type WBD, vibration eliminator, vibration mounting and controls or approved equal.

2.03 CURB MOUNTED ROOF TOP EQUIPMENT - PACKAGED AIR CONDITIONING UNITS, MAKE-UP AIR UNITS AND EXHAUST FANS - MOUNTING TYPE 2

A. Curb mounted roof top equipment shall be mounted on spring isolation curbs. The lower member shall consist of a rectangular steel tube containing adjustable and removable steel springs that support the upper floating section. The upper frame must provide continuous support for the equipment and must be captive so as to resiliently resist wind and seismic forces. All directional neoprene snubber bushings shall be a minimum of 1/4" thick. Steel springs shall rest on 1/4" neoprene acoustical pads and have a minimum deflection of 2 1/2". Hardware must be cadmium plated or galvanized and the springs plated or provided with an approved rust-resistant finish.

B. Weather proofing shall be provided by a continuous flexible aluminum seal joined at the corners by EPDM bellows. The aluminum seal must be mailed over and provide counterflashing to the curb's waterproofing. Provision shall be made for access ports with waterproof covers at the spring location and 2" insulation on the sides of the lower curb.

C. Curbs shall be Mason Industries Inc. Type RSC, Greenheck, Cook, or approved equal.

PART 3 EXECUTION

3.1 GENERAL

A. All equipment, piping, etc. to be mounted on or suspended from approved foundations and supports, all as specified herein, as shown on the drawings, or as required.

B. All concrete foundations, bases, forms, inertia blocks, supports and associated reinforcing shall be provided by the Contractor unless indicated other wise on the drawings.

C. Erect all floor mounted equipment on 4" high concrete pads over the complete floor area of the equipment, unless specified to the contrary herein. Wherever hereinafter vibration eliminating devices and/or concrete inertia blocks are specified, these items to be in turn mounted upon 4" high concrete pads unless otherwise specified to the contrary herein.

D. Guarantee the vibration isolation systems to have the required deflection. Mounting systems and components of the isolation mounting not to be resonant with any of the forcing frequencies of the supported equipment or piping. Mounting sizes to be determined by the mounting manufacturer, and the sizes installed in accordance with the manufacturer's instructions.

E. The installed vibration isolation system for each floor or ceiling supported equipment to have a maximum lateral motion under equipment start-up of shutdown conditions of 1/4". Motions in excess to be restrained by approved spring type mountings.

F. During equipment installation, floor supported spring isolation bases to be set on 2" spacers between the isolation base and housekeeping pad. After all connection (pipe, duct and conduit) have been made to the equipment and the system filled, the spacers to be removed without change of equipment elevation or transfer of stress to the equipment.

G. Provide mountings incorporating vertical limit stops with 1/4" spacers. The mountings to serve as blocking during installation. Adjust mountings and remove spacers after equipment operating loads.

H. Protect all mounting systems exposed to weather and other corrosive environments with factory corrosion resistance. All metal parts of mounting (except springs and hardware) to be hot dip galvanized. Springs to be cadmium plated and neoprene coated. Nuts and bolts to be cadmium plated.

I. Where steel spring isolation systems are described above the mounting assemblies to utilize bare springs with the spring diameter not less than 0.8 of the loaded operating height of the spring. Each spring isolator to be designed and installed so that the ends of the spring remain parallel during and after the spring specified minimum deflection from loaded operating height to spring solid height of 50% of the rated deflection.

J. Provide, as shown or as approved, all necessary supports for equipment furnished under this specification. To meet the varying conditions in each case, these supports to consist of pipestands, steel angle or strap hangers, saddles, brackets, etc., as shown or as approved. All such supports to have substantial flanges, bolted to floor construction; hangers to be supported from framing as described herein. Supports to be properly located with reference to equipment. All details to be as approved.

K. Provide suitable brackets, pipestands, piers or other supports for all coils, air filters, mixing and control dampers, etc., securely clamped to steel beams, columns or bearing walls. All details of the work to be shown on the drawings or as approved.

L. Guarantee that the work as installed under this section of the specifications will not result in the transmission of objectionable noise or vibration to any occupied parts of the building, and take full responsibility for any necessary modifications of this equipment, or of the foundations and supports for the same, necessary to secure this result. Any corrective work required to accomplish the above will be borne at the sole cost and expense of this Contractor.

M. Provide all required supplementary steel for the suspension and support of piping, ductwork, equipment and all other mechanical work.

END OF SECTION

SECTION 23 05 93

TESTING, ADJUSTING & BALANCING FOR HVAC

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment, connections and services necessary to complete the Preliminary and Final Testing and Balancing Work as shown on the drawings and specified herein, including, but not limited to, the following:
   1. Package air-cooled air conditioning units
   2. Gas-fired make-up air units
   3. Exhaust Fans
   4. Air Outlets
   5. Air Distribution Ductwork

B. Tests:
   1. Perform as noted and in presence of Commissioner and authorities having jurisdiction.
   2. Submit Preliminary and Final results for review.
   3. Repair or replace defective work, as directed.
   4. Pay for restoring or replacing damaged work due to tests, as directed.

C. Balancing:
   1. Balancing and testing of all systems shall be performed and supervised by an independent firm specializing in testing and balancing. Firm must be a member of AABC (American Air Balance Council) or NEBB.
   2. Work to be performed by qualified technicians under supervision of skilled and experienced specialist engineers.
   3. Permanently mark setting of all valves, dampers and other adjustment devices in a manner that will allow the settings to be restored. If a balancing device is provided with a memory stop, it shall be set and locked.

1.3 QUALITY ASSURANCE

A. Applicable Standards:
   1. National Standards for Total System Balance (American Air Balance Council) or NEBB.
   2. ASHRAE.

1.4 SUBMITTALS

A. Six (6) copies of the Preliminary and Final balancing report shall be submitted and included in operating and maintenance instructions.
B. Report forms (AABC or NEBB type).
C. Methods of balancing and details of instruments used.
D. Copies of air velocity and pressure readings.
E. Sketches bound in folder showing where readings were taken.

PART 2 PRODUCTS

NOT APPLICABLE

PART 3 EXECUTION

3.1 WORK PERFORMED PRIOR TO TESTING AND BALANCING

A. The Contractor is responsible for start-up and operation of systems during total system balance. Start-up shall include the following:
   1. All equipment shall be operable in safe and normal condition.
   2. Temperature control systems installed complete and operable.
   3. Proper thermal overload protection in place for electrical equipment.
   4. Air Systems:
      a. Final filters clean and in place. If conditions warrant, the Contractor shall install temporary media in addition to the final filters.
      b. Duct systems clean of debris.
      c. Correct fan rotation.
      d. Fire and volume dampers in place and open.
      e. Coil fins cleaned and combed.
      f. Access doors closed and duct end caps in place.
      g. All outlets installed and connected.
      h. Duct system leakage shall not exceed the rate specified.

3.2 PRELIMINARY AIR SYSTEMS BALANCING

A. Balance and adjust air distribution systems in accordance with AABC or NEBB Manuals:
   1. Adjust damper and registers to deliver or remove indicated air quantities for registers, diffusers and terminal units within ±10% in proper pattern so that there are no drafts.
   2. Make pitot readings taken in main trunk ducts in conjunction with inlet and outlet readings.
   3. Provide outlet test reports. All reports shall indicate initial readings prior to preliminary balancing and preliminary readings after balancing has been completed.
   4. Prepare a list of all system deficiencies which affect the balancing of all air systems and submit to Commissioner for action prior to final balancing.

B. Test systems to certify compliance with air quantity schedules and with requirements of authorities having jurisdiction for:
   1. Ventilation.
   2. Proper functioning of operating devices. Prepare a list of all non-operational devices which affect the balancing of all air systems and submit to Commissioner for action prior to final balancing.
   3. Provide apparatus test reports indicating CFM, total S.P., RPM, AMPS and outside air CFM.

C. If it is determined that drive changes are required, the Contractor shall provide all necessary new components prior to final air balancing.

3.3 FINAL AIR SYSTEMS BALANCING

A. Provide final balancing and adjustments to air distribution systems after Contractor corrects all deficiencies. Final balancing shall incorporate all Commissioner comments on Preliminary Balancing Report.

1. Final adjustments to dampers and registers to deliver or remove indicated air quantities for registers, diffusers and terminal units within ±10% in proper pattern so that there are no drafts.
2. Make final pitot readings taken in main trunk ducts in conjunction with inlet and outlet readings.
3. Provide outlet test reports. All reports shall indicate final readings after balancing has been completed.

B. Final test of systems to certify compliance with air quantity schedules and with requirements of authorities having jurisdiction for:

1. Ventilation.
2. Proper functioning of operating devices.
3. Provide final apparatus test reports indicating CFM, total S.P., RPM, AMPS and outside air CFM.

3.4 PRELIMINARY TESTING OF AUTOMATIC CONTROLS

A. In cooperation with the control manufacturer's representative, adjust controls to operate as specified. Testing personnel shall check all controls for proper calibrations and list all control requiring adjustment by control installers.

B. Prepare all list of inoperational control devices which affect all air and water systems balancing and submit to Commissioner prior to final air and water systems balancing.

3.5 FINAL TESTING OF AUTOMATIC CONTROLS

A. Make final adjustments of controls to operate as specified. Testing personnel shall check all controls for proper calibrations and list all controls requiring further adjustment by control installers.

END OF SECTION

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SECTION 23 07 00

HVAC INSULATION

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS
A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to complete the Insulation as shown on the drawings and specified herein, including, but not limited to, the following:
1. Ductwork
2. Piping

1.3 RELATED WORK
A. Piping and accessories.
B. Sheet metal ductwork.
C. HVAC equipment.

1.4 QUALITY ASSURANCE
A. New York City Building Code, New York City Mechanical Code, New York City Energy Conservation Code, ASTM, UL, NFPA.
B. Codes and Standards:
1. All insulations, jackets, or facings and adhesives used to adhere jacket or facing to the insulation, including fittings and butt strips, shall have non-combustible fire and smoke hazard system rating and label as tested by ASTM E-84, NFPA 255 and UL 723 not exceeding Flame Spread 25, Smoke Developed 50.
2. Accessories such as adhesives, mastics, cements, tapes and cloth for fittings shall have the same ratings as listed above.
3. All products or their shopping cartons shall bear the Underwriters' label indicating that flame and smoke ratings do not exceed the above criteria.
C. Qualifications of Installers:
1. Insulation shall be applied by experienced personnel in accordance with the best trade practice, guided by manufacturer's printed installation directions.
D. Qualifications of Materials:
1. Every package or standard container of insulation, jackets, facing, cements, adhesives and coatings delivered at the building site for use must have a manufacturer, brand and description of material. In addition, all vapor barriers shall be labeled, indicating the thickness of insulation, product nomenclature and manufacturer.

1.5 SUBMITTALS

A. Shop Drawings: Shop detail drawings, including method of attachment.

B. Product Data: Manufacturer's printed data, catalog cuts, test data and recommendations.

C. Samples, when requested.

D. Instructions: Installation instructions.

1.6 PRODUCT DELIVERY AND STORAGE

A. Deliver material properly labeled, packaged and undamaged.

B. Do not store exposed to weather; provide suitable material to protect from damage.

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURERS

A. All insulation shall be as manufactured by Owens-Corning, Certainteed, Johns-Manville, Armstrong, or approved equal. For the purpose of setting a standard of quality and thermal efficiency, the insulation materials specified hereinafter are materials as manufactured by Owens-Corning and Armstrong.

B. All adhesives shall be as manufactured by Benjamin Foster, 3M, Goodloe E. Moore Company, or an approved equal.

C. Except where otherwise insulation types and thickness specified are based on glass fiber insulating materials having a "K" value (BTU per hour per square foot per degree temperature difference per inch of thickness) as listed. Alternate insulation materials shall be estimated on the basis of thickness providing the equivalent heat transfer rates are obtained as herein specified. Insulating materials shall be resilient and moisture resistant so that the insulating properties will not be affected by rough handling, water damage and similar construction hazards.

D. All adhesives, sealers and vapor barrier coatings shall be compatible with the materials to which they are applied, and shall not corrode, soften or attach such materials in either the wet or dry state.

2.2 INSULATION MATERIALS (PIPE AND FITTINGS)

A. Pipe Insulation:

1. Pipe insulation shall be one piece of half sectional UL rated and labeled non-combustible glass pipe insulation system with a "K" of .24 at 75°F mean temperature, except as otherwise specified.

2. All above pipe insulation shall be jacketed with Owens-Corning Fiberglass "Fiberglass 25 ASJ/SSL" (all service jacket) a vinyl coated, reinforced and embossed vapor barrier laminate for hot, cold, concealed and exposed piping operating at temperatures from -60°F to +450°F. Jacket shall have a water vapor permanence of not more than .02 Perms. Jacket and butt strips shall have factory-applied self-sealing pressure-sensitive adhesive.

3. In lieu of above jacket, in exposed areas, Contractor may furnish glass cloth jacket with vapor barrier for cold piping and glass cloth jacket without vapor barrier for hot piping.

B. Fittings, Valves and Flanges:

1. Fiberglass Insulation:

a. For fittings on all piping and for valves and flanges on cold piping, apply fiberglass molded or segmental insulation to fittings equal in thickness to that of the insulation to be applied to adjoining pipe. On steam piping, insulating cement may be used as the insulating material for fittings.

b. Fittings, valves and flanges on cold pipe shall be protected by a vapor barrier. The barrier shall be of the vinyl segmented type made specifically for the application. The barrier shall be held in place with metal bands and the joint shall be taped. An alternate method of using fiberglass cloth and a glue sizing in two layers may be used as an alternate.

c. All fittings, valves, flanges, strainers, and steam traps located in mechanical equipment rooms and in conditioned spaces shall be fully insulated. Insulation shall be of the split type held in place with metal bands.

2.3 INSULATION FOR COLD PIPE

A. Provide insulation for piping, fittings, flanges and valves of the thickness listed below:

Insulation Thickness In Inches for Pipe Sizes					
Service	Material	Less than 1- 1/2"	1- 1/2" to 4"	5" to 6"	8" & Larger
Cooling Coil Condensate	Fiberglass	1/2	1/2	--	--

B. Insulation Jackets:

1. Cold pipes concealed and exposed up to 14" shall have factory-applied white fire-retardant jacket with self-sealing lap and butt strip. Ends of pipe insulation sealed off at valves, fittings and flanged with Benjamin Foster 30-35, Goodloe E. Moore Company, or approved equal.

2. Cold pipes concealed and exposed over 14" shall have factory-applied white fire-retardant jacket sealed with Benjamin Foster 82-07 adhesive, 3M, Goodloe E. Moore Company, or an approved equal. All circumferential joints wrapped with a 3" wide strip of white fire-retardant jacket adhered with Benjamin Foster 72-07 adhesive. Ends of pipe insulation sealed off at valves, fittings and flanges with Benjamin Foster 30-35, 3M, Goodloe E. Moore Company, or an approved equal.

2.4 INSULATION (DUCTWORK)

A. Provide insulation types for ductwork as indicated below:

Type	Description
A	Minimum R-5 insulation, 1 1/2" thick, 6 lb. rigid board (Type 705) with factory-applied white fire-retardant jacket applied with mechanical fasteners. Seal all joints and breaks with 5" wide matching self-sealing tape. Butter all punctures with I-C 501. Where stiffening angles are greater than 1 1/2", provide insulation thickness equal to the angle height.
B	Minimum R-5 insulation, 1 1/2" thick, 3/4 lb. density glass fiber blanket with factory-applied flame-resistant glass fiber reinforced foil (FRK) and having a 2" flange, lapped and tied with copper-clad steel wire on 12" centers. All laps and joints sealed with Benjamin Foster 85-20. Ducts having a width greater than 30" provide mechanical fasteners 18" on center to the underside of duct for horizontally run ducts and about the perimeter for vertically run ducts on 24" centers with all penetrations sealed.

B. Provide insulation indicated above for the following duct services:

Service	Insulation Type
Air conditioning supply ducts (exposed)	A
Air conditioning supply ducts (concealed)	B
Exposed Outside air ducts	A
Concealed Outside Air Ducts	B
Air conditioning return ducts (concealed)	B
Air conditioning return ducts (exposed)	A
Garage make-up air ducts	Uninsulated unless otherwise noted.

C. Whenever external duct insulation is specified and acoustical treatment of equivalent insulating effect is required, the external insulation may be omitted.

PART 3 EXECUTION

3.1 INSTALLATION OF INSULATION (GENERAL)

A. Perform all work in strict accordance with the manufacturer's recommendations and the best practices of the trade and the intent of this specification.

B. Apply all insulation over clean dry surfaces, butting all sections or surfaces firmly together and finishing as hereinafter specified.

C. Seal all vapor barriers continuous and throughout against moisture penetration.

3.2 INSTALLATION - PIPE INSULATION

A. Protect of Insulation:

1. Protect insulation on hot pipes by saddles from hangers, guides, rollers and trapeze.

2. Protect insulation on cold pipes from hangers, guides and rollers by 16 gauge galvanized metal shields (at least three times the insulation diameter in length and 1/3 the insulation circumference in width) on the outside of the insulation and vapor barrier. Hold shields in place by straps. Do not piece the insulation with hangers. Where glass fiber insulation is used on piping 3" and larger, provide half section of calcium silicate covering of equal thickness at metal shields.

3. Do not use staples on vapor barrier jackets.

B. Fiberglass:

1. Adhere jacket and butt strips by removing release paper after insulation is installed on pipe and sealing the lap starting in center of each section, working toward the ends. Lap and butt strips must be pressurized by rubbing with hard tool such as nylon sealing tool.

2. Low temperature pipe insulation with vapor barrier jackets shall have all ends of each section buttered vaportight with sealant to prevent travel of moisture to adjacent sections of insulation if vapor barrier on any one section should leak. Ends of pipe insulation shall be sealed off with Foster 30-35, 3M, Goodloe E. Moore Company, or an approved equal at all flanges and valves.

3. If glass cloth jacket is used, in lieu of pressure-sensitive adhesive, jacket and butt strips shall be sealed with Foster 82-07, 3M, Goodloe E. Moore Company, or an approved equal. Staples shall not be used under any circumstances.

4. Where metal bands are used on pipe insulation, they shall be 3/4" wide brass or aluminum bands. Bands shall be spaced to hold the ends and center of each section, and in no case shall the spaces exceed 18". Bands shall not be visible on exposed work.

5. Fittings: Insulation shall be securely fastened to fittings using wire. Apply a skin coat of insulating cement to the insulated fitting if needed to produce a smooth surface. After cement is dry, apply a light coat of fitting mastic, UL labeled, Type C for low temperature pipe and Type H for hot pipe. Wrap the fitting with fiberglass reinforcing cloth by 2" on adjoining sections of pipe insulation. Apply second coat of mastic Type C or Type H over the reinforcing cloth, working into the mesh of the cloth. Smooth the surface. Mastic shall be applied at rate of not less than 40 square feet per gallon (approximately 3/64" wet film thickness for UL rated performance).
6. As an option to the above over fiberglass fittings, a polyvinylchloride fitting cover can be supplied, made of continuous one piece premolded, polyvinylchloride material. Low temperature lines shall have all seam edges of cover shall be wrapped with a vapor barrier pressure-sensitive color matching tape. Fittings to be Zeston, Speed-Line, The Dow Chemical Company, or approved equal.

3.3 INSTALLATION - DUCT INSULATION

A. Rigid Board:
1. Insulation shall be cut to fit between standing seams and stiffeners and shall be secured to ductwork by impaling over mechanical fasteners. Attach pins to surface of duct and locate them not less than 3" from edge or corner to the board and on maximum 18" centers.
2. All joints shall be tightly butted. Apply joint sealing tape to all transverse and longitudinal seams after ensuring you have a dry, dust-free surface. Use nylon sealing tool to apply pressure to the joint and make a good bond and form a complete vaportight system.

B. Flexible Wrap:
1. The duct wrap shall be applied over clean, dry sheet metal ductwork. Duct wrap shall be installed to allow maximum fullness at corners (avoid excessive compression); minimum voids shall be filled with insulating cement, wet troweled into openings.
2. Insulation shall be butted with facing overlapping all joints at least 2" and sealed with fire retardant vapor barrier adhesive and tied with copper-clad steel wire on 12" centers. Horizontal ducts having a width greater than 30" shall be secured on the underside with mechanical fasteners on 18" maximum center. Velocity run ducts shall be secured about the perimeter on 24" centers. All penetrations shall be sealed.

3.4 INSPECTION

A. Upon completion of the installation, visually inspect each insulated area and verify that all insulation is complete and properly installed.

END OF SECTION

SECTION 23 09 00

INSTRUMENTATION & CONTROL FOR HVAC & SEQUENCE OF OPERATION

PART 1.00 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Provide, completely ready for operation, an automatic temperature control system as described herein of the type using electric or electronic devices.

B. Provide in addition to the controls specified in this Section all additional automatic controls, both pneumatic and electric, specified under other Sections of these Specifications and as indicated on the drawings.

C. The entire control system to be complete with all required accessories, control devices, thermostats, valves, motors, relays, transducers, transformers, switches, dampers, panels, and electric wiring to provide the functions as described hereinafter, regardless of whether or not specifically mentioned. All controls to be the product of one manufacturer unless otherwise indicated.

D. Contractor shall comply with New York City Local Law 113.

E. Contractor shall perform testing/reporting to establish ambient baseline noise level conditions prior to the installation of the new units.

F. Contractor shall perform testing/reporting of operating noise level of new units after installation.

1.3 QUALITY ASSURANCE

A. Vendor Qualifications:

1. Unless otherwise approved by the Commissioner or Commissioner, only Alerton, Powers, Johnson, Unit Technologies, Honeywell or Barber-Colman electric and electronic control (or digital) systems or approved equal will be accepted.

1.4 SUBMITTALS

A. Provide shop drawings to the Commissioner for approval before any field installation is started giving complete description of all control elements and showing complete schematic piping and wiring diagrams, indicating control devices, control and interlock wiring, controller setpoints, sequence of operation, details and installation requirements. Drawings to indicate specifically the type of finish of all room type controls, subject to Commissioner approval. Provide control schematic mounted in glass picture frame for wall mounting.

B. Product Data: Product manufacturer's data sheets and catalog cuts.

C. Operational and Maintenance Manual: Provide instructions for operation and maintenance.

D. Submit noise level testing, manufacturer's operating performance showing compliance to New York City Local Law 113, for review and acceptance.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials protected and undampened, with cartons labeled as to manufacturer and contents.

B. Store materials in locations and in a manner to protect same from damage of any kind.

PART 2.00 - PRODUCTS

2.1 GENERAL

A. Provide as herein specified a complete and operational automatic temperature control system of the electric type, Honeywell, Johnson, Alerton, Unit Technologies, Powers, Barber-Colman or approved equal.

B. The control system shall be complete with all necessary panels, control devices, thermostats, transmitters, switches, dampers, motors and relays to provide the functions described under sequence of operation, regardless of whether or not specifically specified.

C. All dampers of the automatic type shall be provided under this section for installation under sheet metal work. All control valves and fittings shall be provided under this section for installation under piping work.

D. Provide lamicoid identification plates for all control devices.

2.2 MULTIBLADE DAMPERS

A. General:

1. Multiblade dampers shown on the drawings in connection with outside air intake, exhaust air discharge, and air recirculation of the fan systems shall be the product of the manufacturer of the temperature control equipment.

2. Self-acting dampers used in the inlet to roof-type exhaust fans shall be provided by the fan manufacturers if specified as an option, otherwise it shall be provided under this section.

3. Openings in walls for outside air takes, together with stationary louvers and screens, will be provided by the Contractor for General Construction, unless otherwise shown on the drawings.

B. Construction of Multiblade Dampers:

1. Frames: Frames shall be of steel, 1/8" thick channel shape or 1/4" thick flat bar. They 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.

2. Blades: Damper blades shall not be wider than 10", shall have formed interlocking edges, and shall have a 1/2" deep "V" pressed in the center to stiffen the blades. Open position of the blades shall be limited to 90 degrees. Damper blades for fan systems shall be not lighter than No. 16 gauge galvanized sheet steel. Unless shown otherwise on the drawing, damper blades for supply systems shall be of the opposed blade type, and those for exhaust systems shall be parallel type.

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 of non-ferrous metal and shall be secured to the blade lugs by means of cotter pins and washers.
5. Provide end switches for all dampers to be sequenced with fan operation.

2.3 LOCAL CONTROL PANELS

A. Provide adjacent to each air conditioning system, heating and ventilating system, water system and other mechanical systems as required, a local enclosed control panel of the steel cabinet type. Panel to meet with NEMA 1 requirements with proper bracing for rigid wall or floor mounting. Mount in this panel all associated temperature controls, such as air gauges, time clock, transmitters, thermometers, relays, accessories, etc. for the electrical control and alarm functions of the system.

B. Equipment mounted on each panel shall be as detailed on drawings.

C. Mark each control device on the panel with nameplates describing its function and cross-referencing it to control diagrams. Provide system flow diagram on face of panel. Panel to have a hinged locked door. Mount controllers and relays internally to minimize unauthorized tampering. Identify all items mounted on or within local control panels by means of 1" X 3" black bakelite nameplates with white lettering.

2.4 ELECTRICAL WIRING

A. Provide all control wiring, regardless of voltage, under this Section. Wiring for unit heater thermostats, exhaust fan thermostats, smoke detectors, smoke damper motors and connections between the smoke detection panel and smoke detectors shall be provided for under this Section.

B. All power wiring, conduit and connections between the motor controls and motors will be provided by the Electrical Trade.

C. Provide interlock wiring between supply and return fans and time clocks, electrical wiring for electric relays (including power feed) for temperature and pressure indication.

D. Provide wiring, conduit and connections for low temperature thermostats, high temperature thermostats, alarms, flow switches, actuating devices for temperature, humidity, pressure and flow indication, point resets and the like.

E. Provide all other wiring required for the complete operation of the specified systems including required transformers.

F. Run all wiring in conduit complying with the requirements of the Electrical Specification and in accordance with authorities and codes having jurisdiction.

2.5 TIME CLOCKS

A. Provide 7-day programmed time clocks, reserve power with day omitting feature. Power contacts to be rated 40 amperes per pole at 277V. Clocks to be surface mounted with NEMA 1 enclosure. Clocks shall be provided with a manual over-ride switch. Provide one clock for each supply system and for each exhaust fan unless otherwise specified.

2.6 TWO-POSITION DAMPER ACTUATORS (ELECTRIC)

A. Provide for each 2-position automatic damper a 2-position electric motor with spring return.

B. Motors shall be low voltage unless otherwise indicated when used in line voltage application, motor shall be provided with internal transformer.

C. Integral spring shall return motor to normally closed position when power fails or is interrupted.

D. Motors shall have one SPDT adjustable auxiliary switch rated for 7.2 Amps at 120 Volts.

E. Stroke shall be fixed at 90° or 160° and timing fixed at 30 or 60 seconds as required for specific application.

F. Housing shall be die-cast aluminum.

G. Motors shall be rated for .86 Amps at 24 Volts and .25 Amps at 120 Volts.

H. Motors used for damper actuation shall be provided with damper linkage, Honeywell Model #605 or approved equal. Linkage shall include motor mounting bracket, motor crank arm, damper crank arm and ball joints. Provide pushrods of lengths suitable for specific application.

I. Actuator motor shall be Honeywell Model #M845, Belimo, Johnson, Control, or approved equal.

2.7 LINE VOLTAGE THERMOSTATS (ELECTRIC WALL HEATERS)

A. Furnish line voltage thermostats where indicated on drawings for installation and wiring by electrical contractor.

B. Thermostat shall control electric radiant heat cables and shall be rated for 22A at 120 vac.

C. Thermostat shall be UL listed

D. Temperature setting angle shall be 50°F to 80°F with a 2°F differential temperature.

E. Thermostat shall be Honeywell Model T4398B1029, Johnson Control, Powers, or approved equal.

2.8 PROGRAMMABLE ROOM THERMOSTATS

A. Provide a room thermostat where shown on the drawings. Thermostats shall be 7-day programmable, electronic, automatic changeover type. Setting adjustment shall be via front face keypad. Thermostats shall have six (6) LED's concealed under device cover to allow checkout of control systems. Separate heating and cooling setpoint adjustments shall be provided. Heating/cooling deadband shall be adjustable from 5°F to 30°F.

B. Thermostat shall provide 2 stages of heating and cooling control and modulating heating or cooling control.

C. Each room thermostat shall be installed with its center approximately 5'-0" above the floor in an area with good air circulation at average temperature.

D. Do not mount thermostat where sensing element may be affected by:
   a. Drafts or dead spots behind door and in corners.
   b. Hot or cold air from ducts.
   c. Radiant heat from sun or appliances.
   d. Concealed pipes and chimneys.
   e. Unheated and uncooled areas behind thermostat.

E. Thermostat shall have integral thermistor sensor for space temperature.

F. Thermostat shall be rated for 24 volts and 20 milliamps.
G. Setpoint adjustment range shall be 55°F to 85°F.
H. Thermostats shall be TCS Basys Controls Model SZ1017, Honeywell, Johnson Control or approved equal.

2.9 GARAGE CO MONITOR & SENSORS

A. Provide CO controllers and CO sensors where indicated on plans.
B. Power Requirements
1. The Controllers shall manage up to 8 each on their respective RS 485 Communication Network or 8 individual 4-20mA analog inputs.
2. The Controller shall provide 8 user programmable relays that can be used to tie a zone or group of sensors to a specific relay or set of relays.
3. Warning and Alarm levels set points can be selected from a value of zero and the full scale range of a sensor or group of sensors. Upon sensing the concentration of target gas at levels equivalent to the Warning and Alarm set points, the relay contact(s) shall activate signaling the event.

C. WARNING and ALARM CONTROL REQUIREMENTS
1. The Controller shall have a programmable OFF time delay function that is adjustable from 0 - 60 minutes in 1 minute increments (factory setting is 0 minutes).
2. The Warning relay shall deactivate from 0-60 minutes after the warning occurrence has abated.
3. The Alarm relay shall deactivate 0-60 minutes after an alarm event has abated.
4. The Controller shall have a local Readout display indicating the active Sensor Point number and the corresponding gas concentration level.
5. The display will scan through all active channels in 2 second intervals.
6. The readout display will visible from a minimum of 5 feet and will be always present, and will not require being turned on or off.
7. A 5 digit LED readout shall be provided for the purpose of displaying the Sensor Point Number and corresponding Gas Concentration reading.
8. The Controller shall provide a full scale, 2 wire 4 to 20mA sourcing analog output that is representative of the highest concentration level of any sensor on the network. This output shall be capable to communicate with a commercial BAS, DCS, or PLC or other analog input device.
9. The Controller shall power up to 8 Z Gard S Sensors or 8 analog input Sensors via internal power supply that is rated at 24 VDC@ 100mA per sensor.

D. CONTROLLER OPERATING REQUIREMENTS
1. Sensor Input Requirements Analog Input Sensors.
2. The Controller shall connect to designated, remotely located Sensors via a 2 or 3 wire 4-20mA analog input. The Controller and its associated Sensors shall continuously monitor for excessive levels of specific Target Gases and provide the necessary notification control in the event that gas levels rise above preset limits.

3. The Controller connects to remotely located Z Gard S Sensors that are automatically recognized and establish the sensor range and gas type. The sensors are linked by a RS 485 4 wire (2 wire for power, 2 wires for data) network communication system.
4. The Z Gard C Controller and its associated Sensors shall continuously monitor for excessive levels of specific target gases and provide the necessary notification controls in the event that gas levels rise above preset limits.

E. PHYSICAL CHARACTERISTICS
1. The Controller enclosure shall not exceed 12.0"W x 15.00"H x 3.75"D in total size.
2. The Controller shall not exceed 15 lbs.
3. Enclosure Type - The enclosure shall be a NEMA 1 General Purpose painted steel enclosure with welded-hinged door. The door is secured to the enclosure using industry standard nominal size 8-32 screws.
   a. User Keypad
   b. Sensor Status LEDs Indicators
   c. Alarm Acknowledge Switch
   d. Warning and Alarm Relay Set
   e. Point Levels
   f. Sensor Fail Relay
   g. Relay and Contact Rating
   h. Contact Selections
   i. Approvals
   j. Full Replacement Warranty
   k. Maximum System Maintenance
   l. Instrument Supply
   m. Product Service

F. On-site Training: The manufacturer must be capable of providing on site training for Commissioner/operator.

G. Instrument shall have one year parts and labor standard warranty plus and extended year warranty for a total of 2 years.

H. RELAY SET POINT and CONTACT RATINGS
1. The manufacturer must be capable of providing on-site service with factory trained personnel.
2. The Controller shall not require periodic maintenance other than verifying the Sensor inputs are responding to the target gases.
3. The Controller shall provide a normally energized Sensor Fail Relay. If a loss of communication occurs between the Controller and remote Sensor, the Sensor Fail Relay will be activated and the Sensor Okay LED located on the Controller door will turn off.
4. The Controller shall include a User Interface Keypad of 16 items, with an LED for each program function located inside the front door of the enclosure. All setup parameters shall be accessed using the keypad.
5. All Warning, Alarm and Sensor Fail Relays shall be shall be Form C, single pole, double throw. Contacts shall be rated for 10 Amps 1/8 HP @ 125VAC, 5 amps resistive at 250VAC or 30VDC.
6. The Contacts shall be capable of being selected normally open or normally closed.
7. The Controller shall include discreet Sensor LED indicating Sensor OK, Warning and Alarm.

8. This Controller shall include a local mounted Audible Alarm rated @ 90 dB with push-button reset switch. The pushbutton reset switch shall silence and reset the Audible Alarm when alarm points are exceeded. The audible alarm can be programmed for each channel to operate either in a solid on tone or a variable on tone. The LED visual alarms will remain on as long as alarm levels are exceeded. This push-button will reset latched alarms if normal gas conditions exist. A horn relay shall be included to facilitate control a remote alarm reset pushbutton.

I. MAINTENANCE REQUIREMENTS

1. Warning and Alarm Set Point Levels - The controller shall provide 8 user programmable Warning and Alarm Relays. The activation set point levels shall be independently adjustable for any value in the readout range. The set points and relay assignments shall provide drive signals to user interface relays. All Warning and Alarm relays shall have the ability to be programmed as Latching or Non-Latching, normally energized or de-energized, increasing or decreasing. CSA by ENTELA

J. The manufacturer must be capable of supplying all equipment used to check or calibrate the sensor units.

K. CARBON MONOXIDE (CO) SENSORS

1. The Sensor electronics shall consist of a single PCB that is microprocessor-based computer-aided and factory-calibrated for the target gas compound with compensation for ambient humidity and temperature and linearized signal output. The PCB shall include all the components required to power, operate the sensor, make calibration adjustments and set the network address jumpers to be used with a communication network. The single PCB shall be mounted to the enclosure using industry standard hardware.
2. The electrochemical sensor shall have a linear response to the target gas selected with accuracy of ±2% full scale. The electrochemical sensor shall not require the periodic addition of reagents. Sensor shall be range shall be Electrochemical 0-200 PPM.
3. Electrochemical Sensors Operating Humidity Range shall be 15-95% RH, non-condensing. Electrochemical Models Operating Temperature Range shall be +32° to +104°F.
4. The Sensor will permit a zero and span calibration service to be performed in the field with an approved calibration kit and multimeter. Calibration adjustments will be made via available adjustment potentiometers.
5. The RS 485 Network communication wiring from the Sensor to the Controller shall be a shielded 4-wire cable of sufficient gage to meet distance requirements of the RS 485 Network Communication. The Sensor Transmitter terminal strips shall be removable for ease of wiring and accept up to 10 GA AWG wire.
6. The Sensor operating voltage shall be 24VDC, 100mA.
7. The Sensor shall include a local LED indicating operational status. The LED shall be mounted so it can be observed without removing any part of the Sensor.
8. The Sensor shall send an electrical signal proportional to the content of the target gas present to a Controller.

9. Sensor units will have available mounting holes for attaching the unit to a flat surface or panel.
10. The system shall require no periodic maintenance other than periodic checking of sensor response to a known concentration of gas.
11. The Electrochemical or MOS Semiconductor Sensor shall be field replaceable when reaching end-of-life.
12. The standard Sensor unit shall not exceed 5.5" H x 5.5" W x 2.2" D in total size including mounting tabs. The standard Sensor unit shall not exceed 2.0 lbs.
13. The enclosure shall consist of two pieces and a steel cover plate that mounts to a metal base enclosure using industry standard hardware.

L. CO Controllers and sensors shall be Model C 8 Point CONTROLLER as manufactured by Z Gard, Conspec, Brasch, or approved equal.

PART 3.00 - EXECUTION

3.01 INSPECTION

A. Examine the area and conditions where Automatic Temperature Control is to be installed and notify the Commissioner of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected by the Contractor in a manner acceptable to the Commissioner.

3.02 INSTALLATION

A. Install equipment in accordance with approved detail drawings, manufacturer's instructions, and as required by sequence of operation.

B. The control system shall be installed by mechanics regularly employed by the manufacturer of the control system, or authorized and certified representatives.

C. The control and interlock wiring shall be the responsibility of this Contractor. Submit completely coordinated wiring diagrams for all wiring.

3.03 SERVICE AND TESTING

A. After completion of the control system installation, the Contractor shall have the control manufacturer regulate and adjust all thermostats, control valves, damper motors, etc. and place them in complete operating condition subject to the satisfaction of the Commissioner. Complete formal instructions shall be given to Commissioner's operating personnel on the operation and maintenance of all control equipment furnished as a part of this Contract.

3.04 GUARANTEE/WARRANTY SERVICE

A. The Contractor shall perform complete maintenance of the Automatic Temperature Control System for a period of one calendar year, at no additional cost to the Commissioner, commencing with the date when the system is placed in operation so that the said controls may be operated 24 hours a day, 7 days a week. The maintenance program shall be performed with all reasonable care to keep the control and system in proper, safe and efficient operating condition. The Contractor shall furnish all labor, materials, supplies, parts, equipment, warning signs, other safety devices and all other things necessary or proper for or incidental to such maintenance.

B. The Contractor shall repair or replace, as soon as possible, any part or parts of the controls and system which become unsuitable for continued use. The heating, ventilating and air conditioning control maintenance service performed by the Contractor shall include but not be limited to the following:

1. Regularly and systematically examine, adjust, calibrate and clean all thermostats, temperature controls, pressure controls, valves, relays, motors and accessories.
2. Regularly and systematically furnish lubricants and lubricate such components as damper bearings, linkages and switches pertaining to the control package.

C. The Contractor shall submit to the Commissioner a detailed record of all maintenance and servicing performed under this Contract and shall notify the Commissioner if during the performance of services, additional repairs or replacements have to be scheduled.

D. The maintenance service described above shall not, however, be a limitation on any rights which the Commissioner would have, either expressed or implied, in connection with this Contract in the absence of such maintenance obligation.

3.05 SEQUENCE OF OPERATION

A. General:

1. Install smoke detectors (provided by electrical contractor) in main supply duct and return duct or plenum of all air handling systems greater than 2000 CFM. Supply duct detector shall be located downstream of filters and ahead of any branch connections. Return duct or plenum detector shall be located upstream of filters, exhaust connections and outdoor air connections. Signal from the building fire alarm system will automatically shut down fans and close all associated combination fire/smoke dampers. The Mechanical Contractor shall provide terminals for the termination of the fire alarm signal for fan shut-down. Provide fire alarm manual reset relay. Signal, interlock wiring, power wiring and final connections will be provided by electrical contractor. The interface with the fire alarm system shall be shown on the ATC wiring diagrams.
2. An electric freezestat of manual reset type electric thermostat with capillary located downstream of preheat coil shall be provided to shut down supply fan or prevent its operation when temperature is below setting.
3. Provide end switches for all automatic dampers to prevent fan operation when dampers are not fully open.
4. For each air distribution system (supply, return and exhaust)

provide an emergency shut-down switch. Location shall be as indicated on plans or as approved by Commissioner.

B. Computer room air conditioning unit (AC-1 and AC-2):
   1. Install controls provided under Section 236450, Article 2.3 of this specification.
   2. Unit shall be manually started via space mounted programmable controller and run continuously. Controller shall cycle compressors, condenser fan, reheat coil and humidifier to maintain temperature and humidity setpoints.

C. Garage Exhaust Fans (EX-1 and EX-2):
   1. Fans shall be manually started and run continuously. When fan is started, motorized backdraft shall open and fan shall start at minimum speed (adjustable). When fan is stopped, damper shall close.
   2. Space mounted CO sensors and controls shall modulate fan speed between minimum and maximum setpoints to maintain acceptable levels of CO through VFD.

D. Make-up air units (MUA-1, MUA-2 and MUA-3):
   1. Install electric operating controls provided under Section 236450, Article 2.2 of this specification.
   2. Units shall be electrically interlocked with their respective garage exhaust fan. Supply fan speed shall be sequenced with exhaust fan VFD's to maintain supply air quantities equal to exhaust air quantities.
   3. When garage exhaust fans are energized, outside air dampers shall open, end switches shall prove and make-up air units shall start.
   4. Discharge air temperature controls shall fire and modulate gas burners to maintain discharge air setpoint temperature (55°F adjustable). Discharge air setpoint shall be reset based on space mounted temperature.

E. Toilet Exhaust Fan Control (TX-1):
   1. Energize exhaust fans during occupied cycle and de-energize during unoccupied cycle.
   2. When fan is activated, damper shall open. When fan stops, damper shall close.

F. Cabinet Heater Control:
   1. For electric heat systems, provide a room thermostat to cycle fan motor and electric element to maintain constant space temperature. Provide integral residual heat sensor to continue fan operation until element temperature falls below preset point.

END OF SECTION

SECTION 23 21 13

HYDRONIC PIPING AND ACCESSORIES

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

B. Piping, fittings, valves and accessories shall be suitable for the pressure and temperature of service.

C. The Contractor shall be responsible for establishing grades and elevations, and checking of all interferences, and shall verify size and locations of all piping in the field prior to the start of installation of equipment and piping. Certain items such as rises and drop in piping, piping offsets, valves, access doors, fittings, sleeves, drain valves, traps, air vents, are indicated on the contract drawings for clarity for a specific location requirement and shall not be interpreted as the extent of the requirement for these items. The Contractor shall, at his expense, perform all minor rerouting of piping around obstructions from new or existing construction whether or not such conditions are indicated on the plans. Minor rerouting of piping is defined as any rerouting which requires less than 10 linear feet of additional piping (measured along the centerline) over and above that shown on the drawings with piping of a size equal to that shown in the original routing. Whenever an obstruction requires more than a minor rerouting as defined above, the Contractor shall report the condition to the Commissioner prior to the start of pipework on the affected system. The Contractor shall be responsible for neglect of checking all elevations, clearances, dimensions and locations of piping systems to prior to the start of work on same.

D. All piping shall be installed above hung ceiling unless otherwise noted. Contractor shall coordinate with Architectural drawings for all ceiling elevations.

1.2 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and service necessary to complete the Pipe and Pipe Fitting Materials, Hangers and Supports as shown on the drawings and specified herein, including, but not limited to, the following:

1. Condensate drain
2. Gas

1.3 RELATED WORK

A. Insulation.

B. HVAC Equipment.

1.4 QUALITY ASSURANCE

A. ANSI, ASTM, ASME, AWS.

B. Comply with requirements of all governing authorities having jurisdiction.

C. No welder shall be employed who has not been fully qualified and certified by an approved, nationally certified, welding bureau or similar recognized testing agency.

D. The competent and experienced welders who have qualified shall be retained at the job at all times when welding is done. Once qualified, they shall not be removed from the job. Each welder shall be in possession of a stamp to identify work performed by him.

E. Welding material and labor shall be in accordance with the welding procedures of ANSI piping codes. Mark of welder shall be stamped on each welded joint of pipe.

1.5 SUBMITTALS

A. Shop drawings indicating pipe layout (3/8" scale), sizes, types of materials, details, attachment and installation. Coordinate the work with other trades doing sheet metal work, electrical work and general construction.

B. Product Data: Manufacturers' printed data, catalog cuts, recommended connections and installation methods. Submit for valves, fittings, strainers, supports, sleeves, anchors and guides.

C. Samples, when requested.

D. Manufacturer's test data.

E. Reports of pipe field hydrostatic test.

1.6 DELIVERY, STORAGE & HANDLING

A. Deliver materials properly identified as to type, size, manufacturer's name, specification code, etc., and undamaged.

B. Do not store exposed to weather; cover with suitable type material to protect from damage.

C. 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 the jobsite with suitable caps, sheet metal covers or plugs. Pipe caps, etc. shall not be removed until just before installation.

D. Cap or plug all openings in pipe and pipe fittings during installation.

E. During loading, transporting and unloading, use care to prevent injury to pipes and pipe fittings. Do not drop pipe or fittings. Examine all pipe and fittings before laying. Do not install any piece that is found to be defective.

F. Store and protect all materials from injury prior to installation. Do not store any materials directly on the ground or floor. Keep materials as clean and dry as possible and free from damage or deteriorating elements.

G. Remove and replace with sound pipe any defective pipe and pipe fittings discovered after installation without additional expense to the Commissioner.

PART 2 PRODUCTS

2.1 MATERIALS FOR PIPE

A. Pipe for the various services shall be as follows:

Service	Size	Material	Type	Weight	Standard
Condensate from Cooling Coils	All	Copper	Hard	Type DWV	ASTM B306
Gas	All	Steel	Black	Schedule 40	ASTM A53A, S, EWR

B. All steel pipe shall be new, Grade A, unless noted above and free from rust or scale.

C. Reinforce piping at all anchor points.

2.2 MATERIALS FOR PIPING FITTINGS

A. Fittings for various services shall be as follows:

Service	Size	Material	Type	Weight	Standard
Condensate from Cooling Coils	All	Wrought Copper	Solder	Standard	ANSI B16.24
Gas	All	Malleable Iron	Screwed	300 psig	ANSI B16.3

B. Weights of fittings shall be as specified above.

C. All screwed couplings and shoulder nipples not exceeding 5" in length shall be of the same material as the pipe but of dimensions conforming to Schedule 80.

D. All fittings used at expansion loops or bends shall be of 250 lb. WSP Class.

E. Cast iron and malleable iron fittings shall be of Crane, Walworth, and Ward Manufacturing or approved equal.

F. Unions 2" and smaller shall be screwed unless otherwise noted. Unions 2 1/2" and larger shall be flanged. Screwed unions on wrought iron and steel pipe, unless otherwise specified, shall be of malleable iron with bronze ground seats suitable for 300 lbs. WSP. Screwed unions on brass pipe shall be brass, ground joint suitable for 300 lbs. WSP. Flanged unions shall be malleable iron, gasket type suitable for 150 lbs. WSP. Unions shall be as manufactured by Crane, Walworth or approved equal.

G. Solder for solder-type fittings shall be of 95% tin and 5% antimony.

H. Brazing material for refrigerant piping shall be 15% silver, 5% phosphorous, 8% copper, brazing filler as manufactured by J.W. Harris, Mueller Industries, Nibco Inc., or approved equal.

I. Dielectric Fitting: Dissimilar connections shall be made with an insulating dielectric material such as Teflon or neoprene (i.e., between copper and black steel pipe).

2.3 PIPE SUPPORTS, HANGERS AND INSERTS

A. Products of B-Line Systems, Fee and Mason Mfg. Co., Grinnell Co., Inc. or Grable Mfg. Co. will be acceptable in place of particular manufacturer's catalog figure number specified herein. Submit shop drawings, bulletins, catalog figure numbers, or samples as may be requested, of supports, hangers, inserts, toggle bolts, proposed to be used for various conditions; obtain approval before installing same.

B. Provide one of the following types of hanger for overhead support of horizontal piping:

1. For copper tubing where hangers are in direct contact with tubing, use clevis type steel hanger, copper plated, Fee and Mason Fig. 364, with supporting rod to suit.
2. For all piping 6" and smaller, use clevis type hangers, Fee and Mason Fig. 239.
3. Provide supporting rods for hangers of diameter and of lengths as required, with double locknuts for each.

C. Where hanger rods leave unsightly holes in ceilings in finished areas, provide steel ceiling plates, Fee and Mason Fig. 279 or cast iron ceiling plates with set screw, Fig. 290.

D. Provide one of the following to support horizontal piping from wall:

1. Where no provision for expansion and contraction is required and pipe can be located close to wall, use steel J-hook, suitable for pipe sizes up to 3", Fee and Mason Fig. 146.
2. For hanger suspension, 750 lb. maximum loading, use light welded steel bracket with hole for one rod up to 3/4" diameter, Fee and Mason Fig. 153. For additional rod suspension, use with this bracket steel clip Fig. 153C for pipe sizes up to 3".

E. Vertical piping supports for copper tubing where hangers are in direct contact with tubing, use copper tubing riser clamps Fig. 368. For steel or cast iron pipe use steel extension pipe clamps Fee and Mason Fig. 241.

F. Where beam clamps are required, use malleable iron "C" clamps with case hardened cup pointed set screw and retaining strap, Fee and Mason Fig. 255 or beam clips, Fee and Mason Fig. 254 or Fig. 388 as required or directed.

G. Concrete inserts shall be approved for local use and shall be black malleable iron universal type, for threaded connections with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms, Fee and Mason Fig. 2570.

H. All insulated pipe shall be protected at supports by pipe saddles. Pipe saddles for use on hangers shall be Insul-Shield pipe saddles as manufactured by Insul-Coustic Corp. or approved equal.

I. Steel anchors of an approved design shall be provided where indicated or required for proper control of stress in piping due to expansion. Anchors shall be made of structural materials of heavy cross section and securely fastened to building construction. Submit detail drawings for approval before installation.

J. Provide pipe alignment guides where indicated, required or directed, to guide the expanding pipe to move freely from anchor points in expansion joints, loops or bends. Construct with angles or channels. Submit detail drawings for approval before installation.

2.4 ESCUTCHEONS

A. Escutcheons shall be one piece with set screw except where otherwise noted, constructed of the following material.
   1. White painted sheet brass or steel for pipes passing through white prefinished ceilings.
   2. Cast iron, deep cut type project above finished floor.
   3. Heavy, solid pattern steel or cast iron with set screw for all other piping.

B. Provide escutcheons on all pipes passing through floors, walls, partitions and ceilings where exposed to view in occupied areas. Also provide escutcheons within custom or factory-fabricated cabinet en-closures.

2.5 VALVES - GENERAL

A. Provide all valves and piping accessories required to complete the installation of all heating, ventilating and air conditioning systems indicated on the drawings and as specified.

B. Provide valve tags and charts 2" diameter, 18 gauge aluminum or brass, embossed numbers filled in with black paint, fastened by heavy aluminum or brass hooks/chains on all valves and controls (except equipment shutoff valves).

C. Valve design, material of component parts, workmanship and other features shall be similar to the following Hammond Valve Corporation catalog numbers for various types listed.

D. Automatic motorized valves for temperature control shall be furnished under Automatic Temperature Control section for installation under this section.

PART 3 EXECUTION

3.1 INSTALLATION OF PIPING

A. General:
   1. Piping shall be installed in neat and workmanlike manner parallel to walls, column center lines but sloped to drain. Work of each trade shall be fully coordinated to provide the design systems without interference between systems. Piping shall be accurately cut, reamed and threaded with sharp dies. Copper piping work shall be performed in accordance with best practices requiring accurately cut clean joints and soldered in accordance with the recommended practices for the materials and solder employed.
      a. Piping shall be dripped to drain at a constant slope of 1" in 40 feet. Drain, piping shall pitch up in direction of flow. All air pockets at top of risers shall be vented, all low points shall be drained to permit full system draindown.
   2. Minor piping and electrical facilities associated with instrumentation and control are not shown. Interconnection of sensors, transducers, control devices, instrumentation panels, etc. is the responsibility of the Contractor and is included by reference in the plans and specifications. Small piping associated with water cooling, drips, drains, and other minor piping may not be indicated to avoid confusion in the plan presentation but shall be provided as part of the contract work.

3. Piping shall be installed so as not to interfere with plumbing fixtures and electrical lighting outlets which must be accurately centered and located. Special attention shall be given to piping above ceilings, which must be kept a sufficient distance from the lighting outlets to permit later installation of the lighting fixtures and their reflectors. Consult with other trades for exact locations of their fixtures, piping and equipment.
4. Arrange and install piping as indicated, straight, plumb and as direct as possible, form right angles on parallel lines with building walls. Keep pipe close to walls, partitions and ceilings, offset only where necessary to follow walls, as directed.
5. Locate groups of pipes parallel to each other and space them at a distance to permit access for servicing valves. Risers shall not have couplings in runs from one floor outlet to the next.
6. The installation of copper tubing shall be accomplished in such a way as to not touch or come in contact in any way with ferrous metals. Where copper tubing piping or fittings may come in contact with ferrous metal anchors, supports or construction, an insulating non-conductor spacer, similar to lead, rubber, or an approved equal, shall be installed to assure prevention of electrolysis.

B. Fittings:

1. Pipe blending shall be in accordance with the recommended practices of the Pipe Fabrication Institute. Only material conforming to ASTM A106S and A53A may be bent. Sizes below 2" may be bent if filed; sizes 2" and larger shall have factory-fabricated bends. Minimum radius and tangent lengths for field bent piping are indicated in the following table:

Size	Minimum Radius	Minimum Tangent
1/2"	2 1/2"	1 1/2"
3/4"	3 3/4"	1 3/4"
1"	5"	2"
1 1/4"	6 1/4"	2"
1 1/2"	7 1/2"	2 1/2"
2"	10"	3"

2. Piping size change shall be accomplished by reducing ell, reducing tee. Eccentric reduction shall be applied in all piping requiring continuous drainage such as steam, condensate and blowdown piping. Concentric increasers shall be used where flow is in direction of increased size. Provide eccentric reduction, top flat, at pump suction reductions.
3. Screw threads (ANSI B31.1.0 par. 135.4) shall be made up with piping compound or other sealing method approved to assure tight joints without overrun of thread into fittings. Compounds shall be approved for service application.
4. Threaded pipe shall be carefully cut, reamed or filed out to size of bore removing all chips, worked into place without springing. Provide Teflon tape on the male thread only. Threaded joints when tight shall not expose more than two full threads.

5. Reduction in horizontal water circulation piping shall be made with eccentric reducers with the straight side at the top and the reduction in horizontal steam and condensate return piping shall be made with eccentric reducers with the straight side at the bottom. Use of bushings shall not be permitted.
6. Copper tubing shall be carefully cut, reamed or filed out to size of bore and worked into place without springing.
7. Dielectric couplings or brass adapters suitable for dielectric service shall be provided at pipe connections between steel or cast iron piping and copper piping.

C. Expansion Requirements:
1. All piping shall be installed throughout the project with due regard for expansion to prevent damage to the building, equipment and piping. Provide anchors, loops or approved type expansion joints where indicated or required for the accurate control of movement.
2. Provide adequate expansion allowance for service temperatures and piping materials.

D. Concealed Piping:
1. Where so indicated or specified, piping shall be concealed in building construction. Install such piping in time so as not to cause delay to work of other trades, and allow simple time for tests and approval, do not cover before approval is obtained. Wherever possible, run branches passing through floor into partitions, offset above floor close to equipment and expose only as much as necessary for final connection.
2. Where furred spaces are indicated, keep pipes as close to structural members as possible so as to require minimum furring. In case of furred beams, obtain approval of resulting headroom clearance before installing pipes. This Contractor is cautioned to check clearances on General Construction Drawings.

3.2 PIPE SUPPORTS, HANGERS AND INSERTS

A. Support horizontal piping in accordance with the following schedule:

Pipe Size	Maximum Hanger Spacing	Rod Size
1" and smaller	6'-0"	3/8"
1 1/4" to 2"	9'-0"	3/8"
2 1/2" to 4"	10'-0"	1/2"

B. Support vertical piping with clamps attached to the pipe, resting on the floor slab. In general, one clamp for each two floors, one clamp at each floor for copper tubing. Where pipes are in open shaft, provide forged steel bar brackets to wall.

C. Support hangers from concrete inserts, toggle bolts, or beam clamps. Furnish, locate a set such inserts and make sure that such inserts are in place when the concrete is poured. Construct inserts of malleable iron or pressed steel with space for rods of all sizes. Install all inserts for pipes 3" and larger in size with a reinforcing rod 5/8" in diameter, run through a slot in the insert specifically provided for this purpose.

D. If any pipe has to be hung in spaces where no inserts have been provided, drill holes in the slab and provide rods and hanger attached to an approved fishplate or install 2 Star No. 7000 double expansion shields connected by a 2" x 2" angle, from which suspended the hanger rod. For pipe size 2" and under use single No. 7000 shields, but the hanger spacing defined hereinbefore reduced to 5'-0". The carrying capacity and size of each shield to be calculated on the basis of the spacing indicated above the minimum size to be 3/8". Install additional shields of the same size so that the number of hangers are of adequate size to support the loads which they carry. Shields may be used in concrete slabs only.

E. Regardless of the type of construction (i.e., concrete, concrete-deck-steel, terra-cotta tile or other variations) take particular care to support all main lines and all large and heavy pipes in an approved manner, including the furnishing and installation of supplementary steel, if required. Submit shop drawings, indicating support methods, point loadings to the building structure and hanger locations for review sufficiently in advance of concrete pouring schedules to permit evaluation, critique and any necessary changes to handling and support methods.

F. Set all inserts for all pipes in ample time to allow concrete work to be performed on scheduled time.

G. Hangers may be directly bolted to steel beams of building construction, where they occur. Smaller pipes may be suspended from cross-pieces of pipe or steel angles, which in turn, to be securely fastened to building beams or hung from building concrete construction by means of rods and inserts. The intention is to provide supports which, in each case, shall be amply strong and rigid for the load, but which will not weaken or unduly stress the building construction.

H. Provide approved roller support, floor stands, wall brackets, etc. for all lines running near the floor or near walls, which can be properly supported or suspended by the floors or walls, which can be near walls may also be hung by hangers carried from approved wall brackets to a higher level than the pipe.

I. Do not hang piping from other piping. Support of hangers by means of vertical expansion bolts is not permitted.

J. Whenever hangers using pipe rolls are used provide approved steel pipe covering protection saddles, spot welded to the piping at each hanger location.

K. Anchor piping where required to localize expansion or to prevent undue strain on piping and branches. Anchors to be entirely separate from hangers and of heavy forged or welded construction of approved design. All anchor designs, when submitted for approval, to include piping reactions which respective anchors are capable of supporting. Provide all indicated or required expansion loops.

L. Support all line of copper tubing individually by approved type hangers not more than 6' apart, or as shown on the drawings. Hangers for Uncovered Tubing: Broad straps fitting outside of covering.

M. Hangers for cold piping to support the pipe without piercing the insulation. Use insulation shields to protect the insulation on cold pipes. Weld insulation protection saddles to insulated hot pipes at roller supports. Wherever fibrous glass pipe insulation is installed install calcium silicate of equal thickness in lieu thereof wherever hangers and insulation shields shall bear only on an insulation material which is of such density that it will not compress, crush or deform.

N. This Contractor may coordinate with other Contractors to use common means of support. Submit for approval all pertinent design data relating to the support as well as verification of the responsibility for the support.

O. Support vertical water piping at approximately the mid-height of the riser (unless otherwise indicated) using a clamp, installed so that expansion and contraction does not cause trapping of air or prevent drainage.

3.5 SLEEVES

A. Provide sleeves for all pipes passing through floors, walls or partitions, hung or furred ceilings, etc. (of sufficient diameter to accommodate pipe covering where such is required). Set sleeves for concrete floors, walls and other masonry work in place so that space all around the pipes, after the pipes are installed in place, are about equal.

B. Protect pipes passing through floors with membrane waterproofing and roofs with Schedule 40 pipe extensions (not sheet metal) and provide "Zurn Z-197" or "Josam 1880" with cast iron integral flashing flange and clamping ring waterproof type pipe sleeves. For membraned floors, fill void between sleeve and pipe with mineral wool and then seal the top with mastic to prevent sound transmission. Sleeves for Penetrations of the Metal Deck (where applicable): Nail, Cut or drill the metal deck after the deck is poured. Set sleeves in such a manner so that no concrete fills their interior during the concrete pouring and screening operations.

C. Sleeves for Reinforced Concrete Walls and in Concrete Beams: Standard weight galvanized steel pipe with anchor flanges. Sleeves through Toilet Rooms and any other such Wet Area Floors: Iron pipe size brass. Caulk floor sleeves for exposed pipes watertight and project approximately 2" above the finished floor so that the plate will properly fit over the same. Finish sleeves flush with the bottom of slab and also with the finished faces of wall.

D. Provide sleeves with an inside diameter at least 1/2" greater than out-side of pipe served, including pipe insulation which must be continuous through sleeve.

E. Do not support pipes by resting clamps on sleeves. Clamps must extend beyond sleeve and be supported outboard of sleeve in an approved manner.

F. Provide escutcheon plates of the proper size for all piping in sleeves passing through walls, furrings, partitions, hung ceilings, etc. throughout the building where exposed to public and/or tenant view. All exposed escutcheons of cast brass, bell type, with set screws and chromium plated and of sufficient diameter to include any required pipe insulation.

G. Provide counterflashing for all piping passing through waterproof wall or roof construction consisting of steel rainhood welded all around to pipe and overlapping flashing.

H. Where space for future pipe and conduits is required, provide sleeves and fill with lightweight concrete.

I. Firestopping and grouting around pipes and ducts through concrete slabs and walls, and masonry walls with Portland cement grout in the sleeved opening extending full depth through wall or floor slab, with sheet metal over the insulation before grouting in. Around pipes and ducts through drywall construction wrap mineral rope and finish with sheet metal collar on ducts and escutcheons on pipe. Attach escutcheons to wall, not pipe. Use at all fire-rated walls and floors.

J. Where piping penetrates mechanical room floor slabs provide 4" concrete curb around pipe penetrations.

3.6 VALVES

A. No valve shall be installed with stem pointing down below the horizontal without the approval of the Commissioner.

B. Install valves so that they are accessible for repacking. Install with operating clearance for handle and stem.

C. On equipment isolation valves install so that valve and piping do not interfere with equipment removal or maintenance. Install unions or flanges on equipment side of valves unless valve is flanged type.

D. Provide valves of a design permitting packing while open and under pressure.

E. Provide all valves, cocks, etc., as required for the complete and proper valving of the entire installation.

3.7 PIPING SYSTEM TESTS-GENERAL

A. Each piping system shall be tested prior to application of insulation or painting. Testing as stipulated herein shall be considered minimum, and where tests stipulated by lawfully jurisdictional authorities exceed these requirements, such more stringent tests shall be performed.

B. All materials and equipment for testing shall be furnished by the installer of the system. Concealed work shall remain uncovered until required tests have been completed. In the event that the project construction schedule requires it, make arrangements and insert proper sectionalizing devices so that a portion of a system may be tested.

C. All piping, unless otherwise specified, shall be tested to a hydrostatic pressure at least 2 ½ times the maximum designed working pressure (but not less than 50 psig) for a sufficiently long time to detect all leaks and defects, and after testing, shall be made tight in the most approved manner.

D. Where controls and accessories are not designed to withstand pipe test pressures, they shall be properly protected against damage during such tests.

E. If in any tests leaks are observed, the defective work or material shall be replaced. No caulking of screw joints or holes will be acceptable. Repetition of the entire test will be required as many times as leaks can be observed from the tests, until no leaks result in successful completion of the test.

F. Make all provisions for removal of test equipment and draining of pipes after tests have been completed. Insulation work shall not be performed prior to inspection and testing of piping.

G. The Contractor shall inform the Commissioner in writing when a section of piping is to be tested and subsequently insulated or otherwise concealed. Such notice shall be given a minimum of five (5) working days prior to the start of testing.

H. Where possible, arrange to conduct tests under constant ambient temperature conditions in order that compensation for temperature change is not necessary.

END OF SECTION

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SECTION 23 31 13

METAL DUCTS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

B. Ductwork, fittings, dampers and accessories shall be suitable for the pressure and temperature of device.

C. Ductwork design drawings are diagrammatic to indicate design intent. The Contractor shall be responsible for establishing grades and elevations, checking of all interferences, providing all fittings, whether or not shown, required accommodating changes in direction or elevation and as necessary to accomplish the intent of the drawings. The Contractor shall verify size and locations of all ductwork in the field prior to the start of installation of equipment and ductwork. The Contractor shall, at his expense, perform all minor rerouting of ductwork around obstructions from new or existing construction whether or not such conditions are indicated on the plans. Minor rerouting of ductwork is defined as any rerouting which requires less than 10 linear feet of additional ductwork (measured along the centerline or its equivalent in fittings) over the above that shown on the drawings in order to avoid an obstruction. Such rerouting shall be performed with ductwork of size equal to that shown in the original rerouting. Whenever an obstruction requires more than a minor rerouting as defined above, the Contractor shall report the condition to the Commissioner prior to the start of ductwork on the effected system. The Contractor shall be responsible for neglect of checking all elevations, clearances, dimensions and locations of ductwork systems prior to the start of work on same.

D. For specified systems and medium and high-pressure ductwork operating at static pressures in excess of 3 inches, Contractor shall test ductwork and related components for air leakage in accordance with the SMACNA HVAC Air Duct Leakage Test Manual as specified herein.

1.2 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to complete the Sheet Metal Ductwork as shown on the drawings and specified herein, including, but not limited to, the following:

1. Sheet metal ductwork and plenums.
2. Access doors in sheet metal work and ceiling.
3. Dampers.
4. Flexible connections.

1.3 RELATED WORK

A. Insulation.
B. HVAC Equipment.
C. Grilles, Registers and Diffusers.
D. Automatic Temperature Controls.

1.4 QUALITY ASSURANCE

A. SMACNA.
B. ASHRAE.
C. NFPA.
D. UL.
E. Comply with requirements of all governing authorities having jurisdiction.

1.5 SUBMITTALS

A. Shop drawings 3/8" scale, showing ductwork layout indicating size, shop construction details, gauges and installation requirements.
B. Test Reports: Field testing of air outlet flow.
C. Samples, when requested.
D. Reproducible as-built mylar after job completion.

1.6 DELIVERY, STORAGE AND HANDLING

A. Protect shop-fabricated and factory-fabricated ductwork, accessories and purchased products from damage during shipping, storage and handling. Prevent end damage and prevent dirt and moisture from entering ducts and fittings by installing temporary closure pieces or shrink-wrap on open ends.
B. Where possible, store ductwork inside and protect from weather. Insulation and acoustic material either loose or installed within ductwork or equipment can absorb damaging moisture and become soiled if left outdoors prior to being installed. Absorbed moisture can foster biological growth and can lead to indoor air quality problems at a later date. Where necessary to store outside, store above grade. To minimize damage all such material or equipment stored outdoors shall be shrink-wrapped prior to shipment to the project. The shrink-wrap shall only be removed once the materials and equipment have been move into enclosed spaces within the building.

PART 2 PRODUCTS

2.1 GENERAL - DUCTWORK AND ACCESSORIES

A. All ductwork, plenums, dampers and all auxiliary work of any kind, necessary to make the various air conditioning, ventilating and heating systems complete and ready for operation, shall be provided.
B. The sheet metal work shall be fabricated and installed in accordance with SMACNA Duct Construction Standards and the ASHRAE Handbook. The SMACNA and ASHRAE recommendations shall be considered as mandatory requirements.
C. The duct system shall comply in strict accordance with NFPA 90A, NFPA 96, the 2008 New York City Building Code, 2008 New York City Mechanical Code and the 2011 New York City Energy Conservation Code.
D. Furnish and install, in an approved workmanlike manner, all the sheet metal work indicated on the drawings and specified herein and required for the heating, ventilating and air conditioning systems. All ductwork indicated on drawings is schematic. Therefore, changes in duct size and/or location shall be made where necessary to conform to space conditions, without additional cost to the Commissioner.
E. Ductwork shall be constructed of galvanized sheet metal unless otherwise noted.

F. Construct all longitudinal joints with Pittsburgh type seams. A snap lock seam shall not be permitted as a substitute for the Pittsburgh lock at corners of ducts unless factory assembled or if shipped knocked down joints are sealed with duct seal and ends of each section are riveted.

G. All ducts shall be true to dimensions indicated, and dimensions shall be clear inside dimensions unless otherwise specified. Dimensions given on drawings of all acoustically lined ducts shall be the clear inside dimensions. Smooth transactions shall be installed where acoustic lining ends and non-lined duct begins. Ducts shall be straight and smooth on the inside with neatly finished joints.

H. Shape all changes in direction, both horizontal and vertical, to permit the easiest possible air flow, using full sized bends wherever possible. All short radius elbows where the center line radius is less than 1 ½ times duct width and square corner elbows shall be fitted with directional flow air turning vanes on both supply, return, intake and exhaust systems.

I. Fresh air intake plenums and exhaust plenums shall be made watertight at all bottom seams and up to 12" on bottom seams by soldering. Where plenums connect to louvers the bottom pans shall pitch down toward the louver. When bottom pan of plenum connects to drain outside, a 1" drain connection shall be fitted at the lowest point in the bottom pan.

2.2 GALVANIZED SHEET METAL

A. Galvanized sheet metal shall comply with ANSI/ASTM A527, lockforming quality, with ANSI/ASTM A525, G90 zinc coating; mill phosphatized for exposed locations.

2.3 STAINLESS STEEL

A. For all ductwork exposed to outdoors, provide stainless steel sheet complying with ANSI/ASTM A167; ANSI Type 302/304/316 with No. 4 directional polish were exposed to view in occupied spaces. Protect finished surfaces with mill-applied adhesive protective paper, maintained through fabrication and installation.

2.4 LOW PRESSURE DUCTWORK

A. Low-pressure ductwork shall conform to the latest SMACNA "Low Pressure Duct Construction Standards."

B. Low pressure ductwork shall be defined as all duct with velocities less than 2,500 fpm and static pressures of 0" to 2" (positive or negative).

C. Ducts with static pressure ranging from 0" to 1" w.g. shall be provided with a "Class C Seal", however, all joints must be sealed. Seal classification shall be as described in the SMACNA tables. Type and method of sealer shall be as described in this section of specifications.

2.5 EXPOSED DUCTWORK

A. Where ductwork is indicated to be exposed to view in occupied spaces, provide materials which are free from visual imperfections, including pitting, seam marks, roller marks, oil canning, stains and discolorations, and other imperfections, including those which would impair painting.

B. Provide flat type seams and joints for all exposed duct construction.

2.6 VOLUME DAMPERS

A. Provide all dampers required for all systems to accomplish the intent of the drawings and specifications. 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 location of balancing dampers is not defined on the drawings, the following minimum standards shall govern:

1. All supply air main branches from truck, each split, and all subbranches from mains shall have balancing dampers.
2. Exhaust and return main branches from trunk, each split and all subbranches 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 damper as far as possible from air outlet to avoid noise transmission.
4. Provide and./or coordinate with General Contractor for easy access to damper, or otherwise furnish remote damper actuator.
5. If damper is not accessible, or is located above a plaster or drywall ceiling, provide a remote damper actuator and damper as manufactured by Young regulator Model 896-C with No. 1200A right angle worm gear and Model 820 respectively, or approved equal. Titus cable operated damper, anemostat cable operated damper.

C. Splitter dampers shall not be used. Use opposed blade dampers after all splits for balancing.

D. Opposed blade dampers shall be a minimum of 5" deep and fabricated of 14 gauge galvanized steel blades with an 11 gauge galvanized steel frame. Blades shall have opposed action and shall ride in bronzed bushings on 1/2" steel shafts. Damper blades shall be operated by a common linkage. Units shall be Model CD-400 as manufactured by Louvers and Dampers, Arlan Dampers Co, Imperial damper and Louver Co., or approved equal. Manual operated dampers shall have a quadrant-locking device.

E. Single blade dampers shall not be used for balancing unless otherwise shown.

F. Parallel blade damper shall be of the parallel blade type with 14 gauge galvanized steel blades and 11 gauge galvanized steel frame. Blades shall ride on bronze bushings with 1/2" stub aluminum shafts. Blades shall be connected by a common linkage. Units shall be as manufactured by Louvers and Dampers, Model CD-500, Arlan Dampers Co., Imperial Damper & Louver Co., or approved equal.

2.7 FIRE DAMPERS

A. Fire dampers shall be installed in all rated construction and as shown on the drawings.

B. Fire damper shall be of the folding blade type, Fire/Seal as manufactured by Air Balance, Inc., or equivalent and shall bear the Underwriters' Laboratories label. Dampers shall meet the requirements of NFPA Bulletin No. 90A and shall be tested in accordance with UL 555.

C. Fire damper blades shall be located outside of the air stream.

D. The number of damper sections and location of doors for access to fusible links shall be approved by the Commissioner prior to construction.

E. End connections to the damper section shall be of the breakaway type to prevent the damper from being pulled out of the wall by a duct failure.

F. Fire dampers shall be manufactured by Ruskin, Nailor Industries Inc., Greenheck Fan Corp., or approved equal.

2.8 FLEXIBLE CONNECTIONS

A. Provide flexible connections to all supply and exhaust fans to prohibit the transfer of vibration from fans to connecting ductwork.

1. Install airtight flexible connections where ductwork or casings connect to fans. Fasten connection securely with bolted clamps. Make the unclamped portion of the connection not less than 6" long, crimped for flexibility.

2. For fans to 4" w.g. static pressure, 20-ounce chemically impregnated fire-retardant canvas, Ventfabrics, Inc. "Ventfab" or approved equal.

3. For connections exposed to sun and weather, provide "Ventlon" glass fabric coated with "Hypalon" by Ventfabrics, Inc., Duro Dyne Corp., The Flexaust Co., or approved equal.

2.9 TURNING VANES

A. Construct turning vanes of the same material as the ducts in which they are installed.

B. Construct turning vanes for low and medium pressure systems of 20 gauge galvanized steel or the equivalent thickness for other duct materials as shown in the specification tables.

C. Turning vanes shall be double vanes as manufactured by Ductmate or approved equal or shop fabricated turning vanes constructed to the same standards. Submit samples of shop-fabricated units for approval.

2.10 ACCESS DOORS

A. Provide access doors in ductwork, equipment housings and connections thereto for access to all apparatus and accessories, air filters, coils, automatic controls, air monitoring and air flow devices, automatic dampers, damper motors, fire dampers, combination fire/smoke dampers and all other areas and equipment requiring periodic inspection or service.

B. Construct and install access doors of the same materials and to withstand the same test pressure without deformation, vibration or leakage as the ductwork and casings in which they are provided.

C. Provide doors in insulated casings and insulated ductwork of the double insulated type with a minimum of 18 gauge sheet metal on both sides of a core of 6-pound density mineral fiber rigid insulation. Gasket doors airtight.

D. Provide access doors in ductwork, which are less than 24" in height and two (2) CAM type latches.

E. Provide access doors, in casings and ducts 24" in height and over, with four (4) CAM type latches.

F. Fit doors closely, reinforce and provide round soft rubber gasketing securely attached to the doors by cement and countersunk reverts for an airtight seal.

G. Man walk-in access doors in casings shall be 58" high by 18" wide. Access doors in ducts shall be 16" by 12", unless otherwise specified.

H. Where access doors are concealed in hung ceiling, provide indicator buttons in the ceiling immediately below the access door.

2.11 ACCESS PANELS

A. Furnish access panels to the General Construction Contractor for installation, for access to all concealed valves and to all other concealed parts of the HVAC systems that require accessibility for the proper operation and maintenance of the systems.

B. All access panels shall be located in closets, storage rooms and/or other non-public areas. Panels shall be positioned so that the equipment can be easily reached and the size opening shall be sufficient for this purpose (minimum 18" x 18"). When access panels are required in corridors, lobby or other occupied areas, they shall be located as directed by the Commissioner.

C. Access panels shall be prime painted with cylinder lock and two (2) keys as manufactured by Milcor, Williams Brothers Corp., Karp Associates Inc., or approved equal. Type shall be as follows:

1. Acoustical tile ceiling - Milcor Type "A"
2. Gypsum board surfaces - Milcor Type "K"
3. Masonry construction - Milcor Type "M"

2.12 COMBINATION FIRE/SMOKE DAMPERS

A. Provide at locations shown on plans or as described in schedules, combination fire/smoke dampers meeting or exceeding the following specifications. Each combination fire/smoke damper shall be 1 ½ hour fire rated under UL standard 555, and shall further be classified by Underwriters Laboratories as a leakage rated damper for use in smoke control systems under the September 1983 or latest version of UL 555, and bear a UL label attesting to same. 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. The leakage rating under UL555S shall be no higher than leakage class 1 (4 cfm/sq. ft. at 1" w.g.).

B. As part of the UL classification, dampers shall have demonstrated a capacity to operate (to open and close) under HVAC system operating conditions, with pressures of at least 4" w.g. in the closed position, and 3,500 fpm air velocity in the open position.

C. In addition to the leakage ratings already specified herein, the smoke dampers and their operators shall be qualified under UL555S to an elevated temperature of 250°F or 350°F depending upon the operator. Appropriate electric operators shall be installed by the damper manufacturer at time of damper fabrication which meets all applicable UL555S qualifications for both dampers and operators.

D. Fusible Link:
   1. Each combination fire/smoke damper shall be equipped with a fusible link, which shall melt at 165°F causing damper to close and lock in a closed position.

E. Each combination fire/smoke damper shall be furnished complete with factory sleeve of length and gauge required for satisfactory installation, and with damper operator factory installed on exterior of sleeve and properly linked to damper operating shaft. Operators shall be two-positioned electric type operating on 120 VAC 60 Hz.

F. Operators shall be of the spring-return fail closed type that will close damper upon power interruption. Damper operators shall be UL listed as Fire Damper Operators, and shall bear the appropriate UL Operator label.

G. Provide end switches on all dampers.

H. Dampers shall be manufactured by Ruskin, Nailor Industries Inc., Greenheck Fan Corp., or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION OF DUCTWORK

A. Adhere to drawings as closely as possible. The right is reserved to vary the runs and sizes of ductwork and to make offsets, where necessary to accommodate conditions arising at the building. Coordinate duct installation with installation of accessories, dampers, coil frames, equipment, controls and other associated work of ductwork system.

B. Provide all ductwork built with approved joints and seams smooth on the inside and a neat finish on the outside. Duct joints as near airtight as possible with laps made in the direction of airflow and no flanges projecting into the air stream. Provide ducts adequately braced to prevent vibration; additional bracing shall be provided where necessary.

C. Ducts shall be securely fastened to the building construction. Provide all hanger inserts as required. Inserts shall be approved for use. Contractor shall furnish and install supplementary steel as required to support ductwork. Strap or trapeze hangers may be attached to building steel using approved bolted beam clamps. Where ductwork is covered in vermiculite plaster, wire lath or lead wrapping, provided additional duct hangers and inserts as required.

D. All ducts passing through floors shall have an angle iron flange around the floor at the duct opening to act as a dirt seal and duct support. Openings between floor and duct shall be sealed airtight. Where ducts pass through interior partitions and exterior walls, conceal space between construction opening and duct or duct-plus-insulation with sheet metal flanges of same gauge as duct. Overlap opening on four sides by at least 1 1/2".

E. Do not run ductwork through electrical equipment spaces, above electrical panels, transformer vaults or enclosures.

F. Provide No. 18 gauge galvanized iron safing around all ducts which, penetrate floor slabs, completely closing off shafts terminating at mechanical room walls, floors and ceiling slabs.

G. Seal all joints airtight with 3M Co. Type EC-800 sealing compound. Where the duct is pierced for any reason, seal with 3M Co. Type EC-800 sealing compound.

H. Adequate space shall be provided around all ductwork to permit installation of insulation when specified.

I. Whenever it is necessary to penetrate the ductwork, with piping or structures, the Contractor shall receive permission from the Commissioner. Streamliner fittings, as detailed in the SMACNA Manuals shall be adhered to.

J. Except as otherwise indicated, all angle irons required for any ductwork construction and supporting shall be galvanized.
   1. For exposed stainless steel ductwork, provide matching stainless steel supports.

K. Exact dimensions of register boxes must await approval of grilles, and exact locations shall be submitted for approval; otherwise, any changes directed after installation shall be made without additional cost. All register boxes and other openings of the ductwork must be tightly closed during construction to keep out rubbish.

L. Care shall be taken to prevent metal scraps and debris from entering the ductwork. All foreign material shall be removed from the duct prior to installation and after installation. During construction, all open ends of ductwork shall be covered with canvas.

M. Do not suspend any device or work items installed by any trade from ductwork (for example - lighting conduit, lighting fixtures, piping, ceiling construction, etc.).

N. Where duct risers are indicated to be offset from shaft to shaft, encase the entire horizontal offset in a 2-hour fire resistant duct wrap.

END OF SECTION

SECTION 23 31 17

ACOUSTICAL TREATMENT

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to complete the Acoustical Treatment work as shown on the drawings and specified herein, including, but not limited to, the following:
   1. Sound linings.

1.3 RELATED WORK

A. Sheet metal ductwork.
B. HVAC equipment.
C. Diffuser, grilles and registers.

1.4 QUALITY ASSURANCE

A. Applicable Standards:
   1. ASHRAE Standard 36-72, NFPA 90-A.
   2. All insulation, and adhesives including fittings and butt strips, shall have non-combustible fire and smoke hazard system rating and label as tested by ASTM E-84, NFPA 255 and UL 723 not exceeding Flame Spread 25, Smoke Developed 50.
   3. UL 18 ASTM C 1071 ASTM G21 and G22.
   4. Accessories such as adhesives, mastics, cements, tapes and cloth for fittings shall have the same ratings as listed above.
   5. All products or their shopping cartons shall bear the Underwriters' label indicating that flame and smoke ratings do not exceed the above criteria.

B. Acoustical Performance Warranty: Guarantee that all equipment will comply with applicable noise level limits specified, when tested in accordance with standards. Provide compliance with applicable noise limits. For equipment operation at pressures, flows, etc., as per plans and specifications.

1.5 SUBMITTALS

A. Product Data: Manufacturer's data sheets.
B. Instructions: Erection and installation instructions.
C. Test Reports: Factory performance data anti-microbial agent tests and field tests.
D. Certification: Submit certified test data for sound power produced by fans, grilles, registers, diffusers. Measurements in accordance with the above standards.

1.6 DELIVERY, STORAGE & HANDLING

A. Deliver materials protected and undamaged with cartons labeled as to manufacturer and contents.

B. Store materials in locations and in a manner to protect same from damage of any kind.

C. Acoustic material and acoustic material installed within ductwork, sound attenuators, air handling equipment, etc. can absorb damaging moisture and become soiled when shipped and if left outdoors prior to being installed. Absorbed moisture can foster biological growth and can lead to indoor air quality problems at a later date. To minimize damage all such material or equipment shall be shrink-wrapped prior to shipment from the factory. The shrink-wrap shall only be removed once the materials and equipment have been move into enclosed spaces within the building.

PART 2 PRODUCTS

2.1 ACOUSTICAL PERFORMANCE REQUIREMENTS

A. Noise levels of air conditioning and/or ventilating equipment ducts, units, grilles, registers and diffusers to conform to the following NC curves per ASHRAE.
Garage.....NC-35
Map Room.....NC-25

2.2 LOW VELOCITY DUCT LINING

A. Sound-Absorbing Material (Ductwork): Fiberglass, 1" minimum thickness, 1- 1/2 lb./cu.ft.density with minimum NRC-0.70, suitable for velocity of 4,000 FPM. 2" liner shall have 1 1/2 lb. cu. ft. density with minimum NRC-1.00. Provide metal nosing at supply fan discharge and at end of lining.

B. Sound-Absorbing Material (Plenums):

C. Fiberglass, 2" minimum thickness, 3 lb./cu. ft. density with minimum NRC-1.05.

D. All acoustical lining shall be treated with anti-microbial agent to inhibit microbial growth in accordance with UL18, ASTM C1071 and ASTM G21 and G22.

E. Liner shall be provided with factory-applied edge coating.

F. Liner shall meet all requirements of NFPA 90A.

G. Adhesive: Benjamin Foster 85-20, or approved equal. Adhesive shall conform to ASTM C916.

H. Line ductwork with 1" liner where indicated on drawings.

I. Liner shall be manufactured by Owens Corning, Aeromat, Johns Manville or approved equal.

2.3 SOUNDPROOFING METHOD

A. Soundproofing construction is required for opening between ductwork and all walls, floors, ceilings.

B. Openings to be filled with fibrous-glass blanket or board for full depth of penetration; caulk each side of opening with permanently elastic, non-aging caulking compound.

PART 3 EXECUTION

3.1 INSTALLATION

A. Dimensions of lined ducts indicated are the inside dimensions of the duct after the liner has been installed.

B. Adhere liner with 100% coverage of adhesive.

C. Mechanical fasteners which do not pierce the sheet metal:
   1. On 16" centers on top sections when widths exceed 12".
   2. On sides when heights exceed 24".
   3. Weld pins and 2" diameter washers. Edges coated with sealant.

D. Abutting edges of acoustic linings, folded under and stapled to ensure that raw edges are sealed.

E. Install exposed edges of acoustic linings provided with sheet metal nosing.

END OF SECTION

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SECTION 23 37 13

DIFFUSERS, REGISTERS AND GRILLES

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS
A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED
A. Provide where shown on the drawings all metal diffusers, grilles and registers of the sizes and capacities indicated.

1.3 RELATED WORK
A. Sheet metal ductwork.

1.4 SUBMITTALS
A. Shop Drawing: Shop retail drawings indicating location and anchoring methods.
B. Product Data:
1. Manufacturer's printed data, catalog cuts and schedule.
2. Submit engineering data in a manner to facilitate convenient review of the following factors.
3. Aspiration ability, including temperature and velocity transverse, throw and drop of each unit, noise criteria ratings for each unit, sizes, free area and quality of construction.
C. Samples, when requested.
D. Instructions: Erection and installation instructions.

PART 2 PRODUCTS

2.1 MATERIALS
A. Select ceiling diffusers and top registers to diffuse the air uniformly throughout the occupied space, and to comply with noise criteria specified under acoustical treatment section. The air shall be diffused at the 5' level to a velocity of not greater than 50 fpm and a temperature differential of not greater than 2°F, when compared with mean room temperature.
B. Provide all ceiling diffusers with an equalizing deflector and opposed blade volume damper.
C. Provide air return ceiling outlets with opposed blade dampers.
D. All diffusers, grilles and registers, unless otherwise noted, shall be factory coated with baked enamel finish of color to be selected by commissioner. All grilles and registers shall be furnished with a 1/4" sponge rubber gasket around the grille frame.
E. Exceptions to foregoing types of grilles, registers and diffusers shall be as indicated on the drawings.
F. In all cases, a schedule of grilles, diffusers and registers shall be prepared and submitted to the Commissioner for approval of size and design of outlets before they are ordered for installation.
G. Each air supply outlet shall have the required capacity and shall be guaranteed to give the required draft with draftless diffusion.

H. Install all air outlets, supply, return and exhaust, in the exact locations indicated on the architectural reflected ceiling plans.

I. All air outlets shall be provided with border frames to match ceiling, soffit or wall construction, and as approved by the Commissioner.

J. All air distribution equipment shall be as manufactured by Anemostat, Titus, Price or approved equal. The following schedule is based on Anemostat model numbers.

2.2 SCHEDULE

A. Ceiling diffusers (CD) shall be Model DF.

B. Ceiling return grilles (CG) shall be Model S3HD.

C. Ceiling exhaust registers (CR) shall be Model S3HD with Model OB-1 opposed blade damper.

D. Top supply registers (TR) shall be Model S2V with Model OB-1 opposed blade damper.

E. Top and bottom exhaust registers (TR and BR) shall be S3HD with Model OB-1 opposed blade damper.

2.3 ACOUSTICAL PERFORMANCE REQUIREMENTS

A. Noise levels of air conditioning and/or ventilating equipment ducts, units, grilles, registers and diffusers to conform to the following NC curves per ASHRAE:
Map Room.....NC-25
Garage.....NC-35

B. Gilles, Registers and Diffusers: Maximum permissible sound power levels in octave bands where operated in an installed condition per plans and specifications:

Octave Band	Maximum PWL re: 10-12 watts (NC-35)
1	64
2.	56
3	49
4	46
5	43
6	42
7	41
8	42

PART 3 EXECUTION

3.1 INSTALLATION

A. Install grilles, registers and diffusers in accordance with approved detail installation drawings and manufacturer's recommendations.

B. Install and locate per Architectural Drawings.

END OF SECTION

SECTION 23 64 50

HVAC EQUIPMENT

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to furnish and install the HVAC equipment as shown on the drawings and specified herein, including, but not limited to, the following:

1. Indoor gas-fired make-up air units.
2. Indoor package air-cooled air conditioning units.
3. Exhaust fans.
6. Electric cabinet heaters.

1.3 RELATED WORK

A. HVAC equipment.
B. Automatic Temperature Controls.
C. Sheet Metal Ductwork.
D. Piping.
E. Vibration Control and Seismic Restraint.
F. Motors and starters.
G. Electrical specifications for installation of motor starters and power wiring.

1.4 QUALITY ASSURANCE

A. ANSI, ARI, ASME, AMCA, ASHRAE, ICC, NFPA, UL.
B. Comply with requirements of all governing authorities having jurisdiction.

1.5 SUBMITTALS

A. Make submittals on all items listed above in Section 1.02, Work Included.
Shop drawings indicating size, location, details and installation requirements.
Product Data: Manufacturers' printed data, catalog cuts, test data, performance curves, manufacturer's recommendations.
Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring for HVAC equipments. Submit manufacturer's ladder-type wiring diagrams for interlock and control wiring. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed. Operational and Maintenance Manuals: Manufacturer's instructions for operation and maintenance.

PART 2 PRODUCTS

2.1 AIR HANDLING EQUIPMENT - GENERAL REQUIREMENTS

A. Construct all apparatus of materials suitable for the conditions encountered during operation.

B. Where corrosion can occur, appropriate corrosion-resistant materials and assembly methods must be used including isolation of dissimilar metals against galvanic interaction.

C. All factory-applied acoustical and thermal insulation, including faceting and adhesives, shall be fire-resistant and to conform to requirements of NFPA and local codes.

D. Where in contact with the air stream, protect insulation against erosion or flaking by a factory-applied plastic or mat facing.

E. Locate and arrange motors, eliminators, filters, cooling and heating coils and other components and accessories so that they are accessible for repair, maintenance and replacement.

F. Mount grease fittings directly on bearings unless the latter are not readily accessible. Where equipment bearings are not visible or are inaccessible, provide easily accessible extensions to bearing lubrication fittings.

G. Thoroughly clean the entire system before installing filters or operating the fans.

H. On systems containing filters, install filters and permanently seal the filter frames airtight before operating the fans. The Contractor, at his own expense, shall replace all dirty filters before turning over the system to the Commissioner.

I. Furnish a second set of sheaves and belts of the diameters required for Final System Balancing as specified in Section 230593 and install same if required. If a sheave and belt change is not required, a duplicate set of sheaves and belts shall be turned over to the Commissioner.

J. Insulation and acoustic material within air handlers can absorb damaging moisture and become soiled when shipped and if left outdoors prior to being installed. Absorbed moisture can foster biological growth and can lead to indoor air quality problems at a later date. To minimize damage all air handling equipment shall be shrink-wrapped prior to shipment from the factory. The shrink-wrap shall only be removed once the units have been move into enclosed spaces within the building.

K. For each access section provide marine light fixture in unit and provided light switch, pilot light, and GFI service receptacle next to access door.

2.2 MAKE-UP AIR UNIT (GAS-FIRED)

A. Provide a direct gas-fired makeup air heater capable of handling 100% outside air of the sizes as scheduled and as specified.

B. Blower section shall include one or more forward-curved, double-width, double-inlet, squirrel cage blowers with self-aligning, permanently lubricated ball bearings, "streamline" air silencers to ensure efficient operation, ball-bearing motor and appropriate drive parts for the specified air delivery and external static pressure.

C. Burner section shall include a burner, suitable for complete combustion of natural gas without the aid of a premixer, and having a turndown ratio of at least 22 to 1. The equipment manufacturer shall select the burner best suited to CFM, temperature rise and type of fuel specified. The burner shall have stainless steel combustion baffles, non-clogging gas ports, spark-ignited intermittent pilot and flame safeguard proving rod. Profile plates to control proper air velocity across burner shall be factory installed, adjusted during an actual firing test and locked in place before shipment. A sight glass shall be provided in burner cabinet.

D. Gas control system shall include the following: Main manual gas cock, gas pressure regulator, motorized safety shutoff valve, modulating gas valve, and pilot cock, regulator and solenoid valve.

E. Electrical control system shall include the following: Remote control wall panel, motor starter with overload, blower providing switch, entering air temperature switch, ignition and flame safeguard, ignition transformer, modulating outlet air temperature controller, high limit control, safety shutoff alarm relay, and control panel box.

F. The unit shall be equipped with filter section with clogged switch and signal light and intake hood and birdscreen.

G. Unit shall be provided with a 1 (one) year warranty on parts and A 4 (four) year extended warranty on the burner.

H. Unit shall be manufactured by Hastings, Reznor, Dravo Corp. or approved equal.

2.3 COMPUTER ROOM AIR CONDITIONING UNIT (AC-1 AND AC-2):

A. Provide a package air-cooled computer room air conditioning unit of the sizes and capacities as scheduled and specified.

B. Unit shall be ceiling hung type with centrifugal condenser.

C. The cabinet shall be constructed of 18 gauge scratch resistant heavy duty G90 galvanized steel. The condenser bottom pans shall be constructed as follows: an inner pan and an outer pan with integral spacers and insulation between the two, to insure a vapor barrier. The complete unit shall be mounted on heavy duty channels to accommodate hanging rods for ceiling/slab floor mounting. Acoustical insulation shall be a minimum density of 5 lbs. And be installed on the interior top, side and bottom pans and panels insulation must meet NFPA 90A and 90B/ASTM-C1071.

D. The evaporator section shall be provided with a Type 304 stainless steel double sloped drain pan.

E. The unit shall be accessible from the sides only. Access doors shall be held in place by sheet metal screws. Access to the blower and motor shall be on one side of the unit. Access to the refrigeration circuit including compressor and sight glass shall be on the opposite side of the unit.

F. The compressor shall be a high efficiency heavy duty heat pump, full hermetic type. The compressor shall be internally protected from over-heating. The compressor shall have an integral crankcase heater as well as an external discharge muffler. Compressor shall be vibration isolated with external spring mounting.

G. The evaporator coil is of aluminum fin and copper tube construction. The coil is constructed of heavy wall, seamless copper tubes that are mechanically expanded to the aluminum fins to provide the highest efficiency. All refrigerant coils have draw through air flow design with extremely large face areas and multiple rows.

H. The condenser coil shall be of a draw through airflow design. The coil shall be made with 3/8 in. OD heavy wall seamless copper tubes. Tubing shall be mechanically expanded to aluminum fins with drawn self spacing collars. All collars shall have no cracks or defects.

I. The blower assembly shall be belt driven with the ability to deliver up to 1" ESP with the use of the standard motor. The blower housing shall be a heavy duty gauge steel double inlet and painted to prevent it from contaminates. The blower wheel shall be mounted on a solid steel keyed shaft. The shaft shall be mounted on resiliently mounted permanently lubricated ball bearings. The blower pulley shall be of cast iron construction and keyed to the blower shaft.

J. The motor shall be resiliently mounted with internal protection from overheating. Motor shall have permanently lubricated ball bearings. The motor shall be mounted to an adjustable motor frame positioned behind the blower assembly bolted to the bottom pan. No motor shall be mounted upon a blower housing. Motor pulley shall be cast iron, keyed, and variable pitch design to allow for field adjustment of specific air flow and static requirements.

K. The unit shall have dual electrical control panels, one in the evaporator section and the other in the condenser section. This shall enable the unit if split in the field to be power wired independently. All components (fan motors, compressors) shall have their own definite purpose contract. Compressor(s) shall be protected with a nonadjustable high and low pressure control with auto reset and lock out relay in each refrigeration circuit. The unit shall incorporate an air pressure differential switch. This shall enable the unit to shut down in the event of an evaporator motor, blower or belt failure.

L. The refrigeration circuit shall include high and low side Schrader access valves, sight glass with integral moisture indicator, filter-drier, high/lo pressure switches all located in the condenser section of the unit and are easily', accessible. The refrigeration circuit shall be capable of being field separated with reusable quick-connects to prevent loss of factory charge when split in the field. The refrigeration circuit shall include a suction line accumulator, quench valve and oil separator. Unit shall be provided with R-410a refrigerant.

M. Unit shall be provided with low ambient controls consisting of a modulating valve controlled by refrigerant discharge pressure and a liquid line receiver. A fall in ambient temperature lowers the discharge pressure. The modulating condenser bypass valve, located between the condenser and receiver, regulates compressor discharge hot gas to the receiver. The higher pressure reduces the flow out of the condenser resulting in a liquid refrigerant accumulation or "flood" in the condenser. This reduces the effective area of the condenser coil and raises the discharge pressure.

N. Unit shall be provided with a steam canister humidifier, an OEM 305 steam humidifier. The humidifier functions on the electrode principle. As water fills the plastic steam generator, it immerses metal electrodes, which then permits electrical current to flow through the water. This current flow produces heat, which then boils the water into steam. This steam is then injected on the downstream side of the cooling coil to provide humidification for the area being served.

O. Unit shall be provided with two-inch thick extended surface type with full depth pleats for enhanced particle removal and lower pressure drop. Filters shall be MERV 8, 60% high efficiency filters.

P. Unit shall be provided an electric reheat coil. A separate power supply is not required. The electric heaters are provided with a limit control switch which turns the heater off if the temperature rises above normal operating conditions. Heater shall be controlled by an SCR controller.

Q. Unit shall be provided with an air pressure differential switch to sense a loss in airflow to protect against call freeze up.

R. Unit shall be provided with a factory installed condensate pump.

S. Unit shall be provided with Marvel microprocessor controller. The controller shall be a complete programmable controller capable of managing up to 16 independent zones from one location. Each zone has up to 4 temperature inputs and 12 alarm sensors for monitoring critical air conditioner functions. The controller has an accuracy of 1% temperature and 2% humidity. The controller shall include the following features:

1. A 4 line by 20 character LCD display in plain English, including alarms.
2. Manual control is possible for any of the system from the controller keypad.
3. Password may be entered to protect settings from being tampered with.
4. The user may select continuous fan operation or operation only on demand for the heating, cooling, humidifying and dehumidifying. On a power failure condition, the system restarts automatically.
5. Cooling up to 4 compressors and heating up to 4 stages.
6. Humidifying by use of an internal electrode steam generator with on/off or modulating control.
7. Electric heat (SCA control).
8. Dehumidifying by cooling/reheat.

The controller shall include the following alarm functions:

1. Loss of air flow alarm.
2. Humidifier alarm indicating a fault with the humidifier.
3. Drain pan alarm indicating a possible overflow condition.
4. Filter alarm indicating filters are dirty and needs to be changed.
5. Compressor hi/lo pressure alarms: shut the appropriate compressor and prevents compressor damage from extreme pressures.
6. Room temperature and humidity readings with user adjustable high and low limit alarms.

7. Heater hi-limit alarm: shuts off the heater when the temperature rises in the unit because of extreme conditions like loss of airflow, etc.

T. Unit shall be factory run-tested and shipped with a copy of the test report signed by the technician.

U. Unit shall be provide with a 1 (one) year warranty on parts and a 5 (five) year warranty on the compressor.

V. Unit shall be manufactured by United Coolair, Stultz, AboveAir Technologies or approved equal. Substituted units not meeting the ECCCNYC performance rating requirement of 13.00 SEER will not be considered.

2.4 FANS - GENERAL

A. Test and rate all fans in accordance with the standards of the AMCA. All fans must bear the AMCA certified rating seal.

B. Make appropriate allowances for the effects on fan performance of all installation conditions including plenum enclosures and inlet and discharge arrangements so that actual installed fan performance equals that specified.

C. Balance all fan wheels and all other moving components statically and dynamically. Where a coating is specified and it affects the balance of the fan wheel, perform the balancing after the coating has been applied.

D. Drill all fan shafts on the center line to receive a tachometer point.

E. Fans shall operate stably without pulsation at design conditions. Centrifugal fan characteristic curves must be such that the fan operating point falls below the point of no flow static pressure, to the right of the point corresponding to that of maximum mechanical efficiency, and a 15% increase in static pressure over that specified results in not more than a 15% a reduction in cfm and does not affect the stability of fan operation. If necessary, accomplish the foregoing by modifying the width of the fan wheel and/or by providing inlet vanes to change the characteristic curve.

F. In addition to other data regarding fan construction and performance, submit to the Commissioner for approval complete certified data for each fan with additional copies for inclusion in the Instruction Manual as follows:

1. Curves showing at the fan speed indicated on the drawings, the relationship between the air handled by the fan from zero to the maximum obtainable in cfm and the static pressure developed, static efficiency, motor horsepower (including drive losses), and sound power levels in decibels in each of the eight octave bands.
2. Correction chart for fans equipped with variable inlet vanes indicating performance at various percentages of opening.
3. Data relating to sound level produced at the fan outlet when operating at design conditions in accordance with AMCA Bulletin 300, Recommended Practice for Sound Testing of Air Moving Devices.

G. Fan shaft shall extend a minimum of 3" beyond the hub of the belt sheave.

H. Provide adjustable V-belt drive for all belt-driven fans.
   1. Sheaves for motor of less than 15 HP shall be adjustable, plus or minus 10%. When the motor is 15 HP or over, use companion type sheaves. Service rating shall not be less than 150% of the maximum estimated load. Select sheave sizes to minimize fan and motor shaft overhung load. Arc of contact of the belt on smaller sheave shall not be less than 120.
   2. Belts shall be reinforced rubber or neoprene, as manufactured by Eaton HY-T multi-wedge drive, Browning Grip Belt or approved equal.
   3. Minimum efficiency shall be 95%.
   4. Submit all selection calculations.
   5. Equipment RPM's indicated on drawings are for selection guidance only. Provide sheaves as required by manufacturer's ratings. Provide additional sheaves as required for balancing at no extra cost to the Commissioner.

I. Provide inlet guards where fan inlets are not connected to ductwork, at double inlet fans within casings, and at single inlet fans connected to walk-in casings. Inlet guards shall be constructed of 2" X 2" heavy gauge galvanized steel wire. Guards shall be securely fastened in place and designed for easy removal. Guards shall meet all OSHA requirements.

J. Units shall be manufactured by Greenheck, Cook, Buffalo-Air, or approved equal.

2.5 EXHAUST FANS

A. Provide a factory-built and tested exhaust fans of sizes and capacities as scheduled and as specified herein.

B. Roof Exhaust Fan - Centrifugal:
   1. Provide a motor-driven fan unit built into weathertight housing, designed for roof curb mounting.
   2. Fan wheel shall be backward curved, non-overloading, centrifugal, die-formed welded steel or aluminum driven through an adjustable V-belt drive as specified.
   3. Fan shall be forward curved centrifugal, die-formed welded steel or aluminum directly driven by motor as specified.
   4. Fan motor shall be dripproof sealed ball bearings with disconnect switch located outside the air stream. Built-in thermal overload protection. Mount the motor on a rigid welded steel chassis floated on rubber vibration isolators. Provide disconnect switch factory installed under weather-proof dome.
   5. Provide a prefabricated aluminum insulated roof curb. Minimum curb height 12".
   6. Provide an aluminum motorized automatic damper.
   7. Provide a weatherproof exhaust hood made of all aluminum, low contour, readily removable for complete accessibility to all operating parts. Screen air discharge with 2" aluminum (.047") bird screen.

8. For upblast fans provide a weatherproof exhaust hood made of all aluminums, low contour, readily removable for complete accessibility to all operating parts. Hood shall have a vertical air discharge pattern and shall be screened with expanded metal bird guard. Provide forced motor cooling through breather tube.

PART 3 EXECUTION

3.01 INSTALLATION

A. Secure all equipment to building structure and install equipment in accordance with approved detail drawings, manufacturer's instructions, and all codes and regulations which apply.

B. Install all accessories not factory installed.

C. Provide start-up services in accordance with manufacturer's instructions.

END OF SECTION

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment, hoisting and rigging, scaffolding and services necessary to complete the Electrical Work as shown on the drawings and specified herein, including, but not limited to, the following:

1. Equipment supports and miscellaneous steel for electrical equipment including seismic restraints per applicable code.
2. Modify Electric Service and Utility Metering.
3. Complete 120/208 volt light and power distribution system, including all distribution switchboards and panelboards.
4. Lighting fixtures, lamps, convenience outlet systems, and miscellaneous wiring devices.
5. Automatic Fire Alarm System.
6. Motor power wiring.
7. Miscellaneous electrical equipment and systems, unless otherwise noted.
8. Lighting panels and power panels.
9. Balancing loads.
10. Grounding system.
11. Sealing of sleeves and other electrical openings.
12. Lighting Control System.
13. Motor control system.
14. Temporary electrical facilities.
15. Hoisting, rigging and scaffolding.
16. All necessary permits, certificates agency approvals and related fees.
17. Freeze Protection.
18. Coordinate Progress and Special Inspections for all work installed by this contractor per New York City Building Code and Section 101-06 of the Rules of the City of New York.
19. Acceptance Testing as required by New York City Building Codes.
20. Removal of existing electrical equipment not required for completion of the work.

1.3 NOTICE TO BIDDERS

A. The specifications and drawings are intended to serve jointly as a basis upon which the Contractor shall submit a contract price for the material and labor provisions.

B. When conflicts occur in the specifications or on the drawings or between either, provide the item of greater quantity or higher cost.

C. Provide all items of labor or materials not specifically indicated, but required to complete the intended installations.

D. Coordinate all work to that of other trades in order that conflicts in space locations do not occur.

E. Perform the work under this contract simultaneously with the Work of other trades, so as not to delay the overall progress of Work.

F. This contractor shall be responsible for his work until completion and final acceptance and shall replace any of same which may be

G. All bidders on this work shall visit the job site and become thoroughly familiar with the conditions under which the work will be performed. The submission of a proposal shall be construed as evidence that the bidder has visited the site and has knowledge of site conditions. Any later claim for extra payment because of difficulties encountered will not be allowed.

1.4 INSPECTIONS, PROGRESS INSPECTIONS, SPECIAL INSPECTIONS AND TESTING

A. This Contractor shall coordinate the following inspections, tests, progress inspections and special inspections as part of the contract work. This Contractor shall provide necessary labor to facilitate all tests required by special or progress inspections.

B. Upon completion or partial completion of the permitted electrical work, inspections, progress inspections, special inspections and tests shall be conducted by the City of New York approved agencies / special inspectors retained by the Commissioner and qualified to conduct such inspections and tests per Rules of the City of New York, Chapter 100, subchapter A. Inspections and progress inspections shall be performed in compliance with Section BC 109 of the New York City Building Code and Chapter 5000 of the New York City Energy Conservation Code (1 RCNY §5000-01). Special Inspections shall be performed in compliance with Sections BC 1704 and BC 1707 of the New York City Building Code for all electrical systems. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code for additional provisions related to inspections.

C. Special Inspections of electrical systems shall be performed by the City of New York and shall include the following as applicable to the system:

1. Visual certification that required components of such systems are complete in accordance with the manufacturer's installation guidelines and the approved construction documents.
2. Supports, hangers, seismic bracing, and vibration isolation equipment are properly spaced and anchored to supporting structure.
3. Installation of required signage and safety instructions.
4. Electrical components are installed and electrical sign-off issued.
5. Required labeling, operational instructions and safety signage properly posted.
6. All related Special Inspections for such systems are complete.

D. Progress inspections of electrical systems shall include the following as applicable to the system:
   1. Through-penetration fire stopping.
   2. Energy code compliance with approved construction documents in accordance with Chapter 5000 of the New York City Energy Conservation Code (1 RCNY §5000-01).

E. Tests of electrical systems shall be performed in accordance with the following New York City Building Code and New York City Energy Code Conservation:

Code Section	Item
Lighting Controls	5000-01

F. The following is a list of all required Special Inspections:

Special Inspection Item	Code/Section
Firestop, Draftstop, and Fireblock Systems	BC 1704.25
Seismic Isolation Systems	BC 1707.7
Fire Alarm Test	BC 907, BC 1704.13, 28.2-Q106.1,FC907.17

G. The following is a list of all required progress inspections:

Progress Inspection Item	Code/Section
Energy code compliance	BC 109.3.5 and ECC Chapter 5000
Fire-resistive rated construction	BC 109.3.4

H. All deficiencies noted on Progress or Special Inspection reports shall be corrected by this Contractor. Contractor shall arrange for re-inspection of items after completion of corrective measures.

1.5 GUARANTEE

A. In addition to the requirements stated in the specifications, the Contractor must guarantee all equipment, materials and appurtenances installed by him to be free from all defects. Upon written notice from the Commissioner, the Contractor shall promptly correct all defects without additional cost to the Commissioner. The Contractor shall adjust each part of the entire installation for proper working order. Reports are to be submitted to the Commissioner and adjustments repeated until the entire system is satisfactory. The Contractor must make good, at his own expense, any defects in materials or workmanship that may appear. The guarantee period shall be for one (1) year after final inspection and acceptance of the project.

1.6 SEISMIC RESTRAINTS

A. Design and provide restraints per applicable code for all equipment installed by this contractor. Submit calculations and details to structural engineer and code enforcement authority for approval.

PART 2 PRODUCTS

2.1 QUALITY OF MATERIALS AND SUBSTITUTIONS

A. Where a specific model and manufacturer of equipment is specified, the contractor shall provide what is specified without substitution. Where specified as "or approved equal", the contractor may substitute equipment except that the burden is upon the Bidder to prove such equality. If the Bidder elects to prove such equality, he must request the Commissioner's approval in writing to substitute such item for the specified item, stating the cost difference involved with supporting data, and samples, if required, to permit a fair evaluation of the proposed substitute with respect to quality, serviceability, warranty and cost. A submittal for a proposed substitution must include comparative data of all performance criteria contained in manufacturers data, the specifications, schedules and drawings and delineate all differences between the proposed substitution and the specified equipment in terms of space requirements, access requirements, supports, connections, power wiring, controls, and all other differences which may require changes to other work, or performance.

2.2 PRODUCT HANDLING

A. In addition to the requirements of the General Conditions, the contractor shall be responsible for the following:
   1. Responsibility for care and protection of Electrical work rests with the contractor until it has been tested and accepted.
   2. After delivery, before, during and after installation, protect equipment and materials against theft, injury and damage from all causes.
   3. Protect equipment outlets and pipe openings with caps.
   4. At the completion of the work, clean and polish fixtures, equipment, and materials.

B. The contractor shall receive, properly house, handle, hoist, deliver to proper location, equipment and other materials required for the contract. Save materials in a manner which will protect them from damage, weather, and entry of debris.

C. In the event of damage, immediately make all repairs and replacements necessary for the approval of the Commissioner and at no additional cost to the Commissioner.

2.3 MATERIALS

A. Design:
   1. Unless otherwise specified, equipment or material of same type of classification, used for the same purpose, shall be products of the same manufacturer. All material shall be new and of the latest design of manufacturer providing equipment or materials. All materials are to be free of defects and corrosion.
   2. Equipment and accessories not specifically described or identified by manufacturer's catalog numbers shall be designed in conformity with NEMA, IEEE, or other applicable technical standards, suitable for maximum working voltage, current and available short circuit current and shall have neat and finished appearance.

3. NOMINAL VOLTAGES (UNLESS OTHERWISE NOTED)
   a. Secondary distribution: 120/208 volt, 3-phase, 4-wire.
   b. Convenience outlets: 120 volt, single phase, 2-wire.
   c. Lighting: 120 volt, single phase, 2-wire.
   d. Motors: ½ horsepower and larger; 208 volt, 3-phase.
   e. Motors smaller than ½ horsepower: 120 volt, single phase.
   f. Provide equipment of sufficient poles and voltage rating to correctly function at the above voltage.
4. WIRE TERMINATIONS
   a. All terminations shall be U.L. approved for use with minimum 75°C wire.

2.4 FIRE STOP PROTECTION
A. Refer to Section 07 84 00 Firestopping.

PART 3 EXECUTION

3.1 SUPERVISION
A. All work shall be performed by competent mechanics under supervision of an experienced supervisor. The Contractor shall, upon initiation of construction, keep a suitable force of men (including supervisory personnel) on the site at all times in order to place all sleeves, inserts, outlet boxes and fixtures, and all other openings as are required for the satisfactory installation of equipment.

3.2 COORDINATION
A. Contractor's attention is directed to scheduling of construction and time limitations for each phase of the work. Work shall be coordinated to permit proper setting of the work of other trades.
B. Where conduit work and electrical equipment are in place prior to completion of adjacent concrete and masonry work, they must be protected against damage and displacement until construction is completed.
C. Provide all anchor bolts, sleeves, inserts and supports for the required Work.
D. Adjust locations of pipes, ducts, electrical raceways, switches, panels, equipment, fixtures, etc., to accommodate the Work and to prevent interferences anticipated and encountered. Determine the exact route and location of each pipe, duct and electrical raceway prior to fabrication.
E. Lines which pitch shall have the right-of-way over those which do not pitch. For example: Plumbing drains normally have the right-of-way. Lines whose elevations cannot be changed shall have the right-of-way over lines whose elevations can be changed.
F. Make offsets, transitions and changes in direction in pipes, ducts, and electrical raceways as required to maintain proper headroom and ceiling heights as shown on architectural drawings and pitch of sloping lines whether or not indicated on the Drawings.
G. Install all Work to permit removal (without damage to other parts) of all parts requiring periodic maintenance or replacement. Arrange pipes, ducts, raceways, to clear the openings of swinging doors and of access panels.

H. Where Work is to be installed in close proximity to Work of other Contractors, and there is evidence that the Work will interfere with Work of other Contractors, assist in working out space conditions to make a satisfactory adjustment.

I. Equipment installed by the electrical trade shall be installed in accordance with the requirements of approved manufacturers submittals or shop drawings. This Contractor shall carefully review approved shop drawings of all equipment to be installed by him to ascertain particular requirements. Any equipment or work installed which is not in accordance with the manufacturers shop drawings or installation instructions will be removed, replaced and installation corrected by this Contractor to comply with the manufacturers shop drawings at no additional cost.

J. The locations of lighting fixtures, outlets, panels and other equipment indicated on the wiring plans are approximately correct, they are understood to be subject to such revision as may be found necessary or desirable at the time the work is installed in order to meet field conditions or to coordinate with modular requirements of ceilings, or to simplify the work, or for other legitimate causes.

K. The drawings show only the general run of conduits and approximate location of outlets. Any significant changes in location of outlets, cabinets, etc., necessary in order to meet field conditions shall be brought to the immediate attention of the Commissioner and receive his approval before such alterations are made.

L. Obtain from the Commissioner in the field the location of such outlets or equipment not definitely located on the drawings.

M. Circuit "tags" in the form of arrows are used where shown to indicate the home runs of conduit to electrical distribution panels and switchboards. These tags show the circuits in each home run and the panel distribution. Show the actual circuit numbers on the finished record tracing and on panel directory card. Where circuiting is not indicated, contractor shall provide required circuiting in accordance with the loading indicated on the drawings.

N. The drawings generally do not indicate the exact number of wires in each conduit for the branch circuit wiring of fixtures and outlets or the actual circuiting. Conduit runs shall contain quantity of circuits as shown on plans. Combining circuits or wiring to effect a reduction in conduit home runs to panel will not be permitted. Provide the correct wire size and quantity as required by the indicated circuiting and/or circuit numbers indicated and control wiring diagrams, if any, specified voltage drop or maximum distance limitations, and the applicable requirements of the New York City Electrical Code.

O. These specifications are basically equipment and performance specifications. Actual installations shall be as shown on the drawings.

3.3 CUTTING AND PATCHING

A. All cutting and patching associated with the installation of the Electrical work is the responsibility of this contractor.

B. No cutting of bearing walls, beams, etc. shall be done without the approval of the Commissioner. All materials, patching and finishing, etc. shall match the surroundings. All cutting and patching shall be done by workmen skilled in the trades and in the employ of the Contractor for the project. All cutting shall be done with saw-type edges to give a neat and workmanlike appearance. All pipe and sleeve holes shall be core drilled unless specified otherwise.

C. The work shall be carefully laid out in advance. Where cutting, channeling, chasing or drilling of floors, walls, partitions, ceilings or other surfaces is necessary for the proper installation, support or anchorage of raceway, outlet or other electrical equipment, the work shall be carefully done. Any damage to the building, piping, equipment or defaced finish plaster, woodwork or metalwork shall be repaired by skilled mechanics of the trades involved at no additional cost.

3.4 TEMPORARY OPENINGS

A. Temporary openings not indicated which may be required or purpose of bringing equipment into building shall be as approved. The contractor will perform work of providing and maintaining openings and of restoring structure, as required to facilitate installation of equipment within building at locations indicated.

B. Holes provided in General Construction work to permit installation of lines for temporary Electrical services will, after removal of such lines, be patched as specified.

3.5 CLEAN-UP

A. The Contractor shall be held responsible for the general clean-up of all areas affected by the work in the Contract. All rubbish and accumulative material shall be removed from the premises and the premises left "broom clean" upon completion.

3.6 CLEARANCES FOR ELECTRICAL EQUIPMENT

A. No electrical equipment, panels, switchboards, disconnect switches, splice boxes, starters, etc., shall be installed where less than required working space clearances, as defined by applicable National or Local Electrical Code, can be maintained. Bring such conditions to attention of Commissioner immediately. Equipment found to be installed with less than required clearances shall be relocated as directed by Commissioner at no additional cost.

3.7 TESTING, ADJUSTING AND BALANCING LOADS

A. Make all required adjustments to electrical systems until all specified performances are met. Contractors shall furnish necessary labor to test for conformance to specifications. Include manufacturers representative. Test shall be witnessed by Commissioner and Commissioners representative. The following system shall be tested for conformance to specifications:

1. Smoke Detection System.

B. Phase legs of all existing and/or new panels shall be balanced at supply point. Any panel with unbalanced loads shall have its circuits rearranged as required to balance phase legs.
C. Check all motors for correct rotation on initiated start-up.

3.8 ACCEPTANCE TESTING

A. This contractor shall provide all Acceptance Tests required by applicable codes including the following:
   1. Smoke Detection Systems per New York City Building Code Sections 907.16 and 907.17, and New York City Fire Code Sections 901.5, 907.17, and 907.18.
B. Contractor shall include the following as applicable for all required Acceptance Testing:
   1. Obtain services of licensed Special Inspector to provide certificate of completed Inspections and Tests.
   2. Notification of appropriate City Agencies when tests are to be witnessed by either the Department of Buildings or the New York City Fire Department, and coordination of time and date of test with respective agencies.
   3. Provide sign-off on contractor's letterhead, signed and sealed certifying system has functioned properly in all required tests.
   4. Provide detailed documentation of tests as prescribed by applicable code.
   5. Provide labor and material, as required, to demonstrate performance of each system component and compliance with all mandatory tests.

3.9 EQUIPMENT SUPPORTS AND HOUSEKEEPING PADS

A. Where supports, for equipment are indicated or specified in electrical work sections, perform as follows:
   1. Provide structural supports for the proper attachment of electrical equipment supplied and also for equipment, such as motor controllers, supplied by others, for mounting, connection, and installation under this Division.
   2. Mount wall-mounted equipment directly to wall by means of steel bolts. Maintain at least 1/2" air space between equipment and supporting wall. Mount groups or arrays of equipment on adequately sized steel channels, such as those manufactured by Kindorf and Unistrut.
   3. Support equipment suspended from ceiling by adjustable threaded steel rods of adequate diameter and strength anchored to the floor arch or the structural steel. Support auxiliary steel, if required, from the building steel. Do not secure hangers to furred ceilings, ductwork, or other piping.
   4. Secure equipment and steel to solid masonry by means of screw and bolt anchors and expansion bolts. On structural steel use clamps that do not depend primarily on set-screw pressure for security.
   5. Do not drill or pierce structural and prestressed concrete members without prior approval.
   6. Unless otherwise indicated, where equipment is indicated or specified to be floor mounted on stands or legs, brace and fasten with flanges bolted to floor.

B. Housekeeping Pads:
   1. Where concrete housekeeping pads are indicated or specified, use concrete mix reinforcement where required.
      a. Where floor is waterproofed, construct foundation so that anchor bolts will not pierce waterproofing hardener; paint to match finished floor.
      b. Where pad design is not indicated on the drawings, provide housekeeping pads for all floor-mounted equipment. Pad dimensions, size of foundation bolts, methods of setting, aligning and anchoring of equipment shall be as recommended by manufacturer of equipment and as approval. Make minimum height above finished floor 4" and extend outer edges 2" minimum beyond machinery bedplate. Submit shop drawings for approval.
      c. For equipment on pad, provide foundation bolts, sleeves, washers, nuts and templates to locate position of bolts. Make sleeves of steel pipe; finish flush with top of rough concrete. For anchorage, make embedded end of bolts hooked, or threaded with nut and square plate.
      d. Provide 1" thick grouting between machinery base plate and concrete pad; fill completely the space between them. Clean top of pad; wet if before grouting. Do not remove leveling wedges before grout wedges before grout reaches its final set. Fill voids left by removal of wedges with grout; finish exposed surface to grout to make neat appearance.

3.10 SEISMIC REQUIREMENTS
   A. Conduit, cable tray and equipment shall be supported and properly braced in accordance with New York City Building Code Reference Standard RS-9-6.
   B. Seismic plans and calculations shall be prepared and designed by a Professional Engineer.

3.11 PAINTING AND FINISHING
   A. Except as specified herein, the finished painting of Electrical Work within the building and on the roof shall be as specified in Architectural.
   B. All Electrical equipment shall have a factory applied prime and finish coat of paint. Galvanized surfaces shall be considered as finished surfaces for equipment rooms and items concealed from view. Plastic products shall be acceptable without a finish coat of paint. All items of equipment marred or rusted, even though factory finished, shall be repainted.
   C. Where conduits, outlet, junction, or pull boxes are mounted on a painted surface, or a surface to be painted, they shall be painted to match the surface. Whenever support channels are cut, the bare metal shall be cold galvanized.

3.12 IDENTIFICATION

A. Furnish a nameplate for each fuse cutout, disconnect switch, relay and equipment enclosure including all panelboards and switchboards. Unless otherwise noted, use lamicoid or aluminum 2" by 1/2", with black enamel background with etched or engraved upper case letters, enclosed by natural aluminum border, or black and white laminated bakelite plate with beveled edges and same size and lettering. Inscribe name and number of equipment as shown on the Drawings include feeder size and identify source of power (panel and circuit) and as approved by the Engineer. Secure to equipment with brass or stainless steel screws. Approved: Seton Nameplate Company, or approved equal.

B. Tag each conductor passing through a splice or pullbox with a flameproof white linen tag, indicating point of origination and termination of the conduit. Use black "India" ink on tags.

C. Nameplates for equipment which is part of the Fire Alarm and Emergency Communication system are to be red background with white engraved lettering permanently affixed to equipment including all fused cutouts, remote alarm lights, and equipment panels.

3.13 FIRE-STOP PROTECTION

A. Refer to Section 07 84 00 Firestopping.

3.14 TEMPORARY SERVICE

A. Temporary services are specified under "General Conditions".

3.15 EXISTING ELECTRICAL WORK WITHIN PROJECT AREAS

A. Remove or modify existing equipment and/or systems as required by the drawings or specifications and as may be required to facilitate installation of Work by other trades.

B. Remove existing, fixtures, clean and reinstall after installation of ductwork, piping, etc. in all areas with new mechanical work and existing ceilings to remain. Modify existing outlet box locations, extend existing branch circuit wiring with new to facilitate installation of existing fixtures. Check Mechanical and Architectural drawings to identify areas where this work is required.

C. All existing work that is to be retained within the project areas is to be revised as required to conform to the specifications. Contractor shall maintain continuity of all electrical systems to all areas not covered by this renovation and shall provide 48-hour notice of any planned power interruptions or signal system outages.

D. All existing electrical work, lighting fixtures, switches, receptacles, devices etc. shall be removed unless otherwise indicated or unless required for continuity to other areas. All existing devices and fixtures shall be removed and outlets capped with flush covers using countersunk screws.

E. All existing concealed conduits and flush outlets and wiring no longer required shall have the wiring removed, outlets blanked up, and conduits abandoned in place.

F. All existing exposed conduit, outlets, cables, and wiring no longer required shall be removed.

G. Existing flush outlets and concealed conduits may be used for the new circuiting as far as practical. All conductors in existing conduits that are reused for the new work shall be new.

H. Remove all demolition material from the project site.

3.16 INTERFERENCE WITH THE COMMISSIONER'S NORMAL OPERATION

A. All work shall be performed in such manner as not to interfere with the normal work operations in adjacent spaces or buildings.

B. In no way shall the Contractor block or restrict the means of egress for adjacent spaces, decrease the fire rating of walls, partitions, ceilings, doors or combination thereof of adjacent spaces or means of egress, interrupt safety systems or in any way adversely affect the safety of people or materials in adjacent spaces.

C. The Contractor shall provide temporary wiring to maintain continuity of systems within occupied areas.

D. All personnel traffic and material delivery shall be routed so as to absolutely minimize travel through adjacent work areas.

3.17 CONNECTIONS TO EXISTING WORK

A. Connect new work to existing with minimum interference. Where connections or interface to existing systems is required, consult with manufacturer of existing equipment to ascertain appropriate methods and required modifications to accommodate new work.

3.18 PREMIUM TIME WORK

A. The following work shall be performed at night or weekends other than holiday weekends as directed and coordinated with the Commissioner:

1. Any work requiring interruption of existing services.
2. Any work which interferes with or interrupts the normal work being performed in spaces or buildings adjacent to the work site.

END OF SECTION

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SECTION 26 05 19

BASIC MATERIALS AND METHODS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS
A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to complete the Electrical Work as shown on the drawings and specified herein, including, but not limited to the following:
1. Provide basic materials and methods.

1.3 RELATED WORK
A. Finish painting.

1.4 QUALITY ASSURANCE
A. Manufacturers Instructions:
1. In addition to the requirements of these Specifications, comply with manufacturer's instructions and recommendations for all phases of the work.
B. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the following:
1. American National Standards Institute, Institute of Electrical and Electronic Engineers, National Electrical Manufacturers Association and Underwriters' Laboratories, New York City Electrical Code.
2. Electrical Metallic Tubing: Comply with the latest edition of Underwriters' Laboratories Standard UL-797, American National Standards Institute C80.3.
3. Rigid Conduit: Comply with the latest edition of Underwriters Laboratories Standard UL-6, and American National Standards Institute C80.1.
4. Conductors: Comply with American Society of Testing Materials and International Power Cable Engineering Associations.
5. Surface Metal Raceways: Comply with latest edition of UL-5, and NEMA.
6. Electrical Wireways: Comply with latest edition of UL-870.
7. Dimmers (Wall Box Type): Comply with latest edition of UL-20.

1.5 SUBMITTALS
A. Shop Drawings: Submit shop drawings for the following items:
1. Approved fire stop.
2. Wire and Cable: Identify for what purpose each type will be used.
3. Raceways: Catalog Cuts of each type, with proposed use identified.
4. Switch and Wiring Devices: Sample of each type.

1.6 TESTS

A. Test all conductors for continuity and proper connection after installation.

B. Perform standard 500-volt insulation test with "Megger" tester on all wiring AWG #8 and larger installed. Tests are to show insulation resistance in excess of 50 megohms. Replace any conductors failing to meet this test.

PART 2 PRODUCTS

2.1 RACEWAY SYSTEM

A. Provide raceway as required for all wiring systems. Provide conduits whose sizes are not noted on the Drawings in accordance with the requirements of the New York City Electrical Code for the quantities and size of wire installed therein, including required ground conductors.

B. Provide electrical metallic tubing manufactured of steel, galvanized and coated with a chromate coating on the outside and a silicone epoxy-ester lubricant on the inside. Use steel compression gland fittings, as manufactured by O.Z Gedney or approved equal where running exposed within building. Set screw type fittings may be used for concealed work. EMT shall be Allied Tube and Conduit type EMT or approved equal.
Where installed in slab or fill, provide concrete tight fittings. Utilize rigid heavy wall conduit bends and elbows where exiting from slab.

C. Provide rigid conduit manufactured of hot-dipped galvanized rigid steel, with chromate coating. All threads shall be galvanized after cutting. Rigid conduit shall be Allied Tube and Conduit type GRC or approved equal.

D. Flexible Steel Conduit: Maximum length, 6 feet, unless specifically noted elsewhere. Single strip, continuous, flexible, interlocked, double wrapped steel, galvanized inside and outside forming smooth internal wiring channel, as manufactured by National Electric Products, Triangle, Clifton Conduit or approved equal. Flexible metal conduit must contain an equipment bonding jumper wire bonded at each end or an equipment ground conductor, sized as required, except as permitted by code for 20 ampere branch circuits only. Provide connectors with insulated grounding type bushings.

E. Liquid-Tight Flexible Electrical Conduit.

1. Same as flexible steel conduit except with tough, inert watertight plastic outer jacket, "Seal-Tite" Type U.S. (American Brass Company) "Flexible Seal Type LX", (Columbia Cable and Electric Corporation), "Electric-Flex" (International Metal Hose).

2. Fittings: Cast malleable iron body and gland nut, cadmium plated with grounding lug cast integrally with gland nuts. Spiral molded nylon or vinyl-sealing ring between gland nut and bushing and nylon-insulated throat, as manufactured by Gedney, type 4QL or approved equal of Appleton, or Thomas & Betts.

F. Wireways: Hinged or screw-cover type of sizes indicated or as required by the New York City Electrical Code for the quantity and size of wires contained within, complete with elbows, tees, connectors, adapters, etc., with all parts factory-fabricated and of the same manufacturer. Acceptable wireways are Square D "Lay-In-Duct", General Electric Co. "Type HS", Square D "Square Duct", or ITE "KBL-Duct", or approved equal.

G. Surface Metal Raceway: Minimum .040 inches thick steel construction. Two-piece systems shall have galvanized base. Two piece unless otherwise noted on drawings. Provide compatible transition and adaptor fittings from conduit to surface metal raceway. Provide necessary fittings, boxes, elbows, ground clamps, connectors to facilitate complete installation. Surface metal raceway system shall be Wiremold or approved equal.

H. Expansion Fittings: Provide at all building expansion joints or where required to compensate for raceway expansion and contraction. Provide with bonding jumper. Shall be similar to O.Z/Gedney Type AXB, TX, EXE, AXDX or DXX as required, with type BJ, bonding Jumper.

I. Sleeves through fire-rated floors and walls: Conform to New York City Electrical Code and New York City Building Codes to prevent fire spread. All floors are fire rated. Refer to Architectural Drawings for fire walls. Where approved for use by local authorities utilize O.Z. Gedney CFS series fire seal for conduit penetration and CAFS series for cable penetrations of fire rated structure up to 3 hour rating. Utilize O.Z. Gedney PTFS series fire seal for non-fire rated, power or telephone service heads supplied via flexible steel conduit.

J. Special seals shall be provided where penetrating roof slab. A malleable iron, watertight entrance sealing device, gland sealing assembly shall be pressure type permitting tightening by wrench after concrete has been poured. Unit to be similar to OZ Gedney type FSK, or approved equal. Install copper tubing or brass pipe sleeve through the roof. Solder 20 oz. copper or 6 lb. lead plate to the sleeve and mount on roof membrane waterproofing. Plate shall extend a minimum of 12" all around from the outside of the sleeve. After conduit is installed, fill space between conduit and sleeve with oakum or untarred, unoiled jute and seal the top and bottom to a depth of at least 1-1/2" with "Special Condensed" Duxsealer 4951 or approved equal.

K. A malleable iron watertight entrance sealing device shall be provided where conduits enter exterior walls. Unit shall be gland sealing assembly on inside and outside of wall of pressure type, capable of being tightened with wrench after concrete is poured. Unit to be OZ Gedney type WSK or approved equal.

L. Raceway fittings shall be malleable iron and steel galvanized or cadmium plated for steel conduit.

M. Bushings shall be insulated type made of iron, threaded type with conduit end stop and integrally molded, non-combustible phenolic insulated surfaces rated 150°C. Grounding type bushings shall, in addition, have tin plated copper grounding path. Bushings shall be O.Z. Gedney type HB or approved equal. Grounding type shall be O.Z. Gedney type HBLG or approved equal.

N. Raceway Supports

1. Support raceways on accepted types of wall brackets, specialty steel clips, or hangers, ceiling trapeze hangers, or malleable iron straps. Plumbers perforated straps are not permitted. Acceptable manufacturer's brackets or hangers are Kindorf, Elcan, Binkley, Multi-Frame, Power-Strut, or Unistrut, or an

approved equal. Do not suspend raceways or equipment from other raceways, steam, water, or other piping or ductwork. Provide independent and secure support methods.

2.2 OUTLET, JUNCTION AND PULL BOXES

A. Provide zinc coated or cadmium plated sheet steel outlet boxes not less than 4 inches octagonal or square, unless otherwise noted. Use shallow outlet boxes in columns millwork, mullions, and other areas where structural or physical conditions prohibit use of ordinary outlet boxes. Equip fixture outlet boxes with 3/8" no-bolt fixture studs. Where fixtures are mounted on or in an accessible type ceiling, provide a junction box and extend flexible conduit to each fixture. Outlet boxes in finished ceilings or walls shall be fitted with appropriate covers, set to come flush with the finished surface. Where more than one switch or device is located at one point, use gang boxes and covers unless otherwise indicated. Sectional switch boxes or utility boxes will not be permitted. Provide Steel City Series "GW" tile box, or approved equal, or a 4" square box or for multi-gang Steel City Series "G", with tile ring in masonry walls which will not be plastered or furred, or where "Drywall" type materials are applied. Provide outlet boxes of the type and size suitable for the specific application.

B. Construct junction or pullboxes not over 150 cubic inches in size as standard outlet boxes, and those over 150 cubic inches shall be code gauge galvanized steel with screw on covers of same gauge metal. Provide cable supports (3/4" conduit covered by loose fitting fiber tubes) for two (2) or more horizontal rows of conduit entering box. Provide ground lug in all junction/pull box, larger than 4" X 4" standard outlet, box O.Z. Gedney type "KG" or approved equal for each conduits pair.

C. Plug any open knockouts not utilized.

D. Provide surface mounted outlet and junction boxes of cast metal with threaded hubs in unfinished indoor locations and where exposed to moisture and all outdoor locations.

2.3 WIRE AND CABLE

A. Provide wire with a minimum insulating rating of 600 volts. Communications, circuits, and low tension systems, including fire alarm system wiring is specified elsewhere.

B. Conductor:

1. Electrical grade, annealed copper, and fabricated in accordance with ASTM standards. Minimum size number 12 for branch circuits; number 14 for control wiring.

C. Stranding and Number of Conductors

1. Number 12 and 10 solid.
2. Cables larger than number 10, stranded, in accordance with ASTM Class B stranding designations.
3. Control wires stranded in accordance with ASTM Class B stranding designations.
4. Cables, multi-conductor, and as specified elsewhere for low-tension systems.

D. Insulation

1. Type THWN/THHN insulation suitable for use in wet locations up to 90°Centigrade. Use for lighting, receptacles and motor circuits and for panel, switchboard, service and equipment feeders, unless otherwise noted on drawings.
2. Type THHN or THWN/THHN - Flame retardant: Heat-resistant

thermoplastic insulation, nylon jacket rated for 90° Centigrade operation. Use for lighting branch circuit wiring installed and passing through the ballast channels of fluorescent fixtures, wiring in metal roofdecks in or near roof insulation, in joist spaces, or in raceways exposed to the sun.

3. Type FEP: Fluorinated Ethylene Propylene insulated heat resistant wire suitable for 200°C operation. Use for any wiring within 3 feet horizontally or 10 feet above any furnace, boiler or similar appliance, or where high temperature wire is indicated.

E. Manufacturers: General Electric, Phelps-Dodge, Triangle, Anaconda, Kaiser, General Cable, Okonite, Simplex, National Electrical Products, Collyer, Kerite, or approved equal.

F. Color code all wiring for control systems installed in conjunction with mechanical and/or miscellaneous equipment sections of this Specification in accordance with the wiring diagrams furnished with the equipment. Color code all branch circuit wiring, including circuits to motors, and all feeders by line and/or phase.

120/208 V 3-Phase

Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Ground	Green

Factory color code wire No. 2 and smaller. Wire No. 1 and larger may be color coded by field color taping of the entire length of the exposed ends.

G. Connectors:

1. General: Make all connections, splices, taps and joints with solderless devices, mechanically and electrically secure. Protect exposed wires and connecting devices with electrical tape or insulation to provide insulation values not less than on conductor. Make splices only in junction pullboxes, or panelboards with oversized wiring gutters to accommodate tap. All splices, taps, terminations, shall be approved for the temperature rating of the conductor.

2. Large Cables (No. 8 and larger):
   a. Use compression type connectors, taps and splices specifically designed for the particular connection. Insulate splice with "Bake-lite" covers designed to fit around splice.
   b. Manufacturer: Burndy Engineering Co., Inc; Thomas & Betts, or approved equal.

3. Branch Circuit Wires (No. 10 and smaller): Use any of the following type of terminals and connecting devices:
   a. Hand Applied: Coiled tapered, spring wound devices with a conducting corrosion-resistant coating over the spring steel and a plastic cover and skirt providing full insulation for splice and wire ends. Screw connector on by hand. Manufacturer: Ideal Industries "Wing Nut"; Thomas & Betts "Piggy"; 3M Co. "Scotch-Lok", or approved equal.
   b. Tool Applied: Steel cap, with conducting and corrosion resistant metallic plating, open at both ends, fitted around the twisted ends of the wire and compressed or crimped by means of a special die designed for the

purpose. Specially fitted plastic or rubber insulating cover wrap over each connector. Manufacturer: Thomas & Betts "Stakon"; Ideal Industries" No. 410 Crim Connector" and "Wrap Cap"; Buchanan; Burndy or approved equal.

H. Electrical Tape:
1. Specially designed for use as insulating tape.
2. Manufacturer: Johns-Manville; Minnesota Mining, or approved equal.

I. Lubricant: Use lubricant only where the possibility of damage to conductors exists. Use only a lubricant which is inert to cable and conduit and in no way restrict ease of pulling through conduit with passage of time.

2.4 SWITCHES AND WIRING DEVICES

A. General:
1. All devices shall be specification grade flush mounting. Duplex receptacles shall have brown. Face, local wall switches shall have ivory handle.
2. Cover Plates: Provide cover plates for all wall receptacles outlets, including telephone and switches. Submit sample to Commissioner and obtain approval prior to installation. When two (2) or more switches or devices are shown at one location, mount under a common plate. Plates shall be brushed #302 stainless steel.

B. Local Wall Switches:
1. Quiet operating, alternating current type, with rocker operator and heat resistant plastic housing. Silver allow contacts. Rated 20 Amperes, for use at 120 and 277 Volts, and capable of full capacity on tungsten, fluorescent, or HID lamp load. Designed for wiring with up to AWG No. 10 wire.
2. Use single pole, double pole, 3-way, 4-way, pilot or keyed type as shown on drawings.
3. Local wall switches shall be Hubbell whose catalog numbers are indicated below unless otherwise noted, or approved equal of Pass & Seymour or Leviton.

	Device	Standard Line Catalog #
a.	Single Pole Toggle Switch	HBL1221
b.	Three Way Switch	HBL1223
c.	Four Way Switch	HBL1224
d.	Single Pole Switch and	HBL1221-IL
e.	Three Way Switch with	HBL1223-IL
f.	Single Pole Locking	HBL1221-L
g.	Single pole, momentary	HBL1557
h.	Dual Technology Vacancy Wall Sensor	HBL-LHMTS
i.	Dual Technology Vacancy Ceiling Sensor	HBL-CUI500

C. Space Saver Switches: Use smaller compact switches where specifically shown on drawings or where required to facilitate installation of switch. Switches shall be Pass and Seymour Series 201, 2,3,4 or approved equal.

D. Duplex Convenience Receptacles:
1. Three-pole, National Electrical Manufacturers Association and American National Standards Institute standard type, with bronze

contacts which accept plug with two (2) parallel blades and one (1) grounding blade. Heat-resistant plastic enclosure. Two (2) grounding screws. Break-off terminals for two (2) circuit wiring. Rated at 120 volts alternating current.

2. Manufacturers: Hubbell Cat. #5362 (20Ampers) or approved equal of Pass and Seymour or Leviton.
3. Isolated Ground Receptacles shall be Hubbell Cat. #IG5362 or approved equal of Pass & Seymore or Leviton.
4. Ground Fault Protection Type (GFI) shall be Hubbell Cat #GF-5362A or approved equal.

E. Floor Outlets:
Flush floor outlets for power and or telephone shall be made up of Hubbell single, double or triple gang box, Hubbell B-2436, B4233, and/or B-4333 with S-3825 plate over duplex 20 A power section(s) and S-2625 plate over Telephone/Data sections and S-3425 plate over power section, with 30 AMP or larger outlets. Provide with SB-3083, SB-3084, and/or SB-3085 carpet flange in carpeted areas. Receptacle shall be Hubbell 5362 or as required to match indicated circuiting if over 20 Amperes.

F. Outdoor Locations and Ground Fault Interrupter Receptacles:
1. Protect receptacles located outdoors or where indicated to be weatherproof by a GFI receptacle, Hubbell Catalog #GF-5362 or approved equal.
2. Protect exterior receptacles by a cast aluminum weatherproof metal plate with a stainless steel spring-loaded, casketed lift cover. Plate shall be U.L. listed for wet locations with cover open and with cover closed.

G. Special Receptacles: Furnish and install special purpose receptacles to match cord and plug of equipment supplied or indicated circuiting, including twist lock type where indicated. Receptacles shall be Specification grade as manufactured by Hubbell or approved equal.

2.5 SWITCH-BOX OCCUPANCY SENSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
1. Hubbell.
2. Leviton Mfg. Company Inc.
3. Watt Stopper (The).

B. Description: PIR type with integral power-switching contacts rated for 800 W at 120-V ac, suitable for incandescent light fixtures, flourescent light fixtures with magnetic or electronic ballasts, or 1/6-hp motors; and rated for 1000 W at 277-V ac, suitable for incandescent light fixtures, flourescent light fixtures with magnetic or electronic ballasts, or 1/3-hp motors, minimum.
1. Include ground wire.
2. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (215 to 2150 lx); keeps lighting off when selected lighting level is present.

2.6 INDOOR OCCUPANCY SENSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
1. Hubbell
2. Leviton Mfg. Company Inc.
3. Sensor Switch, Inc.
4. Watt Stopper (The).

B. General Description: Wall- or ceiling-mounting, solid-state units with a separate relay unit.

1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
4. Mounting:
   a. Sensor: Suitable for mounting in any position on a standard outlet box.
   b. Relay: Externally mounted though a 1/2-inch (13-mm) knockout in a standard electrical enclosure.
   c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
6. Bypass Switch: Override the on function in case of sensor failure.
7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (215 to 2150 lx); keeps lighting off when selected lighting level is present.
8. Dual-Technology Type: Ceiling mounting; detect occupancy by using a combination of PIR and ultrasonic detection methods in area of coverage. Particular technology or combination of technologies that controls on and off functions shall be selectable in the field by operating controls on unit. Sensitivity Adjustment: Separate for each sensing technology.
   a. Detector Sensitivity: Detect occurrences of 6-inch (150-mm) minimum movement of any portion of a human body that presents a target of at least 36 sq. in. (232 sq. cm), and detect a person of average size and weight moving at least 12 inches (305 mm) in either a horizontal or a vertical manner at an approximate speed of 12 inches/s (305 mm/s).
   b. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.

PART 3 EXECUTION

3.1 RACEWAY SYSTEMS

A. General:

1. Securely fasten all raceways at intervals and locations required by the New York City Electrical Code. Install capped bushings on conduits as soon as installed and remove only when wires are pulled. Securely tie embedded raceway in place prior to embedment. Conduits installed below or in floor slabs must extend minimum of 6 inches above the finished slab to the first connector. Lay out the work in advance to avoid excessive concentrations of multiple raceway runs. Locate raceways so that the strength of structural members is unaffected and they

do not conflict with the services of other trades. Install 1-inch or larger raceways in or through structural members (beams, slab, etc.) only when in the manner accepted by the Commissioner. Draw up couplings and fittings full and tight. Protect threads from corrosion with one (1) coat red lead or zinc chromate after installation. Where galvanized conduit is used, use only steel pullboxes or malleable iron fittings.

2. Where a space of over 24 inches to suspended ceilings occurs, the suspending hangers may be utilized to support conduits of 1 inch or less trade size. Where suspended ceilings are 24 inches or less below the structure, provide independent support from the structure for all raceways.
3. Mount conduits a minimum of 8 inches above any accessible type ceiling or with spacing as required to permit relocation of recessed fixtures to any location.
4. Provide insulated grounding type bushings for all feeder conduits and for all branch circuit conduits entering enclosures, panels, pull/splice box etc. grounding bushings not required for branch circuit conduit terminations at standard 4" X 4" or smaller outlet box. Provide insulated bushings for all conduits not requiring insulated grounding type bushings. Secure conduit to all boxes and enclosures, by means of double locknuts one on inside and one on outside. Provide appropriate connectors, couplings for use with EMT to utilize specified bushings.
5. Minimum size conduit shall be 3/4".

B. Above Grade - Define as the area above finished grade for a building exterior and above top surface of any slabs (or other concrete work) on grade for a building interior. Above-grade raceways to comply with the following:

1. Install raceways concealed except at surface cabinets and for motor and equipment connection in electrical and mechanical rooms. Install a minimum of 6 inches from insulation when crossing or 12 inches from insulation when running parrallel to flues, steam pipes, or other heated lines. Do not install within 36" from uninsulated flues, steampipes, or other heated lines. Provide flashing and counter-flashing for waterproofing of raceways, outlets, fittings, etc., which penetrate the roof. Route exposed raceways parallel or perpendicular to building lines with right-angle turns and symmetrical bends. Run concealed raceways in a direct line and, where possible, with long sweep bends and offsets. Provide sleeves in forms for new concrete walls, floor slabs and partitions for passage of raceways. Waterproof sleeved raceways where required. Seal in an approved manner all raceway openings and sleeves through fire rated walls, floors, and ceilings after raceway installation.
2. Provide raceway expansion joints with necessary bonding conductor at building expansion joints and where required to compensate for raceway or building thermal expansion and contraction.
3. Provide raceway installation (with appropriate sealoffs, explosion-proof fittings, etc.) in all special occupancy areas, as defined and classified in Article 500 of the National Electrical Code, in accordance with that article. Provide conduit sealoffs where portions or an interior raceway system pass through walls, ceilings or floors which separate adjacent

rooms having substantially different maintained temperatures, as in refrigerated or cold storage room.

4. Rigid Conduit: Install in the following above grade areas:
   a. Embedded concrete walls and floor slabs.
   b. Where exposed to mechanical injury.
   c. For power to smoke detection systems.
   d. Where specifically required by the New York City Electrical Code.
   e. For underground or exterior work.
   f. All work in apparatus area.
   g. All remaining areas except as permitted or specifically required in the following paragraphs:
5. Provide flexible metal conduit in sufficient lengths not exceeding 6 feet for:
   a. Branch circuits serving makeup of motor, transformer and/or raceway connections where isolation of sound and vibration transmission is required. For connections in locations exposed to weather and in interior locations subject to moisture, and motor connections use liquid-tight flexible metal conduit.
   b. Connections to recessed lighting fixtures.
   c. Provide separate grounding conductor. Securely grounded on each end of sections of flexible raceways. Size in accordance with the New York City Electrical Code.

C. Below Grade: Defined as the area below finished grade for a building exterior and below or within the bottom floor slab for a building interior. Below grade raceways to conform to the following:
1. Extend below-grade raceways two (2) inches minimum above the floor or equipment foundation.
2. Install exterior underground conduits 24 inches minimum below finished grade. Do not penetrate waterproof membranes unless proper seals are provided and penetration is approved by the Commissioner.
3. Below grade raceways shall be rigid steel. Where permitted by local codes and local authorities, contractor may utilize type IMC metal conduit.

D. Provide separate code size ground conductor in surface metal raceways.

3.2 OUTLET, JUNCTION AND PULL BOXES

A. Provide all outlet, junction and pullboxes as indicated on the Drawings as required for the complete installation of the various electrical systems, and to facilitate proper pulling of wires and cables. In general, install pull boxes, or pull fittings, no less than every 100 feet of straight horizontal run conduit or three (3) 90° bends, unless otherwise noted. Junction boxes and pullboxes shall be sized and supported per New York City Electric Code, unless otherwise noted.

B. Provide bare copper ground wires, in all junction/pull box, larger than 4" X 4" interconnecting each conduit pair grounding bushings via ground lug. Size ground wire as follows:

Feeder	Ground Wire
up to #2	#8
#1 thru 1/0	#6
2/0 thru 3/0	#4
4/0 thru 350 MCM	#2
500 MCM thru 600 MCM	1/0

C. The exact location of outlets and equipment is governed by structural

conditions and obstructions, or other equipment items. When necessary relocate outlets so that when fixtures or equipment are installed, they will be symmetrically located according to the room layout and will not interfere with other work or equipment. Verify final location of all outlets, panels, equipment, etc., with Commissioner.

D. Back-to-back outlets in the same wall, or "thru-wall" type boxes not permitted. For non-fire rated walls provide 12 inches (minimum) long nipple to offset for all outlets shown on opposite sides of a common wall to minimize sound transmission. Provide 24" (minimum) horizontal separation for outlets shown on opposite sides of a common, rated, fire wall or party wall.

E. Where outlets are installed in steel stud type systems, provide additional cross bracing, bridging, and/or straps to make the outlet completely rigid prior to the application of the wall facing material.

F. Unless otherwise noted on Architectural plans, locate outlets as follows. Heights listed are from finished floor to center of device. Mounting heights for other equipment are as shown on the Electrical or Architectural Plans or as herein further indicated.

1. Convenience and signal outlets: 15 inches above finished floor unless otherwise noted.
2. Lighting Switches: 3 feet, 6 inches, unless otherwise noted.
3. Clock Outlets: Below ceiling.
4. Wall Telephone Outlets: 4 feet 6 inches.
5. Exit Lights: Wall mounted nine inches below ceiling to center line.
6. Wall Mounted Fixtures: As indicated on drawings.
7. Where counters occur, mount outlets above counter.
8. Where bookcases occur, mount outlets in toe space.
9. Fire Alarm Pull Stations: 4 feet, 0 inches to handle.
10. Wall Mounted Battery Packs for Emergency Lighting: 8'-0" minimum above floor.
11. Wall Mounted Fixtures: 7 feet, 6 inches or over mirrors as applicable or 1 foot below ceiling lower than 8 inches. Stairwell fixtures shall be 8 feet, 6 inches above finished floor or 1 foot below ceiling.

G. Provide a standard access panel, having a hinged metal door neatly fitted into a flush metal trim, where a junction box or equipment is located above non-accessible ceilings or behind finished walls. Coordinate location and type with the Commissioner. Removable covers must be accessible at all times.

3.3 WIRES AND CABLES

A. Provide a complete system of conductors in raceway system. Mount all wiring through a specified raceway, regardless of voltage application, unless specifically noted elsewhere.

B. Drawings do not indicate size of branch circuit wiring. Unless specifically noted elsewhere in this Specification, minimum wire size is to be No. 12 except for motor starter control circuit which may be No. 14. For branch circuits whose length from panel to first outlet exceeds 75 feet, use AWG No. 10.

C. Do not install wire in incomplete conduit runs nor until all moisture is swabbed from conduits. Insulation resistance to ground is not to be less than that approved by the New York City Electrical Code. Eliminate splices wherever possible. Where necessary, splice in readily accessible pull, junction, or outlet box. Clear interior of raceway of burrs, dirt, and obstructions before wires are pulled.

D. Provide cable supports for all vertical risers in accord with New York City Electrical Code requirements.

E. Flashover or insulation value of joints is to be equal to that of the conductor. Provide Underwriters' Laboratories listed connectors rated at 600 volts for general use, and 1,000 volts for use between ballasts and lamps of gaseous discharge fixtures.

F. Use terminating fittings, connectors, etc., of a type suitable for the specified cable furnished. Provide compression equipment connectors, terminals or splices for all terminations or splices. Make bends in cable at termination prior to installing compression device. Make up all fittings tight. Recheck all splices and terminations and make mechanically and electrically tight during a fifteen (15) day period immediately prior to final acceptance of the work.

G. Install wire in raceways and make up all terminations in strict accordance with manufacturer's recommendations using special washers, nuts, etc., as required.

H. Extend wire sizing for the entire length of a circuit unless otherwise noted.

I. Conduit runs shall contain quantity of circuits as shown on drawings. Combining circuits or wiring to effect a reduction in conduit homeruns will not be permitted except as per paragraph N this section.

J. Common Neutral: A Common Neutral is not permitted for two, or three single pole 15A or 20A, branch circuits.

K. Circuiting indicated on drawings is diagrammatic and intended to show devices on a common branch circuit. Contractor may, at his option regroup indicated single pole 20 amp circuits into homeruns of his choice within the following criteria:

1. Maximum of four (4) circuits per homerun. Contractor may increase quantity to a maximum of nine (9) circuits per homerun provided all conductors are increased to #10 AWG, when homerun contains more than four (4) circuits.
2. All homerun conduits shall be minimum 3/4"C up to six (6) circuit homeruns, increase size as required by code for ground and/or isolated ground conductors. For seven to a maximum of 9 circuits per homerun, minimum size conduit shall be 1". Increase size as required by code for ground and/or isolated ground conductors as indicated on drawings or specified elsewhere.
3. When homeruns are regrouped from those indicated on drawings, contractor shall provide 20% of the eliminated homeruns, but not less than one (1) per panel, as spare, empty conduit, for future use. Run from electric panel locations to centrally located, uniformly spaced locations on floor as directed by Commissioner. Terminate in junction box with Nylon pull cord.

3.4 FLOOR AND WALL OPENINGS

A. Seal all floors and fire rated floor, ceiling and wall openings necessary to accommodate electrical equipment. This includes all openings in electrical and communications closet floors to permit vertical electrical and communications systems distribution. Seal communications system floor openings only after installation of all wires, cables, etc. including those installed by others. Utilize a approved fire stop system. A list of U.L. approved systems appears in "Through Penetration Fire Stop Systems" in the U.L. Fire Resistance Directory, Guide XHEZ.

3.5 GROUNDING

A. Provide grounding in accordance with the New York City Electrical Code and as noted on Drawings, and described elsewhere in specifications.

B. In addition, furnish a separate insulated green equipment ground conductor for the following branch circuits:

1. Circuits serving any wall box dimmer.
2. Circuits serving any Isolated Ground receptacles.
3. Circuits serving any duplex or simplex Computer Terminal Receptacles.
4. All circuits serving equipment, fixtures, receptacles, etc. including low voltage circuits.

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SECTION 26 24 00

120/208 VOLT ELECTRICAL SERVICE SYSTEM

PART 1.00 - GENERAL

1.1 GENERAL REQUIREMENTS
A. Work of this Section, as shown and specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment, hoisting rigging and services necessary to complete the Electrical Work as shown on the drawings and specified herein, including but not limited to, the following:
1. Provide electrical service system in accordance with the Contract Documents.

1.3 RELATED WORK
A. Equipment Supports and Nameplates are included in this division as specified in Section 260500
B. Fusible panel boards as specified in Section 262416.
C. Disconnect switches as specified in Section 262923.
D. Excavation and Backfill.

1.4 QUALITY ASSURANCE
A. Comply with applicable requirements of the local utility company.
B. Manufacturers Instructions:
1. In addition to the requirements of these specifications comply with manufacturers instructions and recommendations for all phase of work.
C. Except as modified by governing codes and by the Contract Documents, comply with applicable provisions and recommendations of the following.
1. Switchboards: Comply with latest applicable standards of Underwriters Laboratories Standard U.L. 891 National Electrical Manufacturers' Association PB-2, and the New York City Electrical Code.
2. Fusible Switches: Federal Specification W-C-865C.
3. Fuses. Comply with latest applicable standards of Underwriters Laboratories Standards U.L. 512, UL 198C, UL 198D, and UL 198E and the National Electric Code.

1.5 SUBMITTALS
A. Shop Drawings: Submit shop drawings and manufacturer' data for the following items:
1. Service Switches, Service End Box and Utility metering
a. Provide fully detailed and dimensioned shop drawings. Include information on type and sizes of structural supports, metal thicknesses, surface finishes and bus cross sections, as well as single line diagrams of switch, fuse and bus arrangement.
b. Frame under glass a print of approved shop drawing showing wiring diagram and switch arrangement. Mount where directed by Commissioner.
c. Include the following signed statement on the shop drawings:
"LAYOUT AND DIMENSIONS ARE BASED
ON ACTUAL FIELD DIMENSIONS."

d. Furnish a complete schematic wiring diagram and full set of equipment wiring diagrams. Include coordination study by manufacturer.

e. Short Circuit Ratings: Prepare single line diagram indicating all switchboards, panelboards, MCC, etc. Indicate device short circuit ratings, indicate UL listed series ratings of devices when upstream current limiting overcurrent device is employed, indicate all bus short circuit bracing.

B. Test Reports: Submit certified test reports showing compliance of the following items in accordance with the Contract Documents.

1. Service and distribution switchboards specified by this section shall be given a 60 Hz A.C., dielectric test. Dielectric test shall be phase to phase, and phase to ground, at twice rated voltage plus 1,000 volts, but not less than 1,500 volts, for one (1) minute, prior to shipment from factory. A test voltage which is 20% higher than that in the one minute test may be applied for one (1) second as an alternative to the one (1) minute test. The date of the test and the name and title of the individual certifying the test shall be clearly shown on a label affixed to the equipment.

2. Ground Systems

a. Perform point-to-point tests to determine the resistance between the main grounding system and all major electrical equipment frames (i.e. switchboards, distribution panels, power panels and lighting panels), system neutral, and/or derived neutral points. Investigate and verify all ground connections associated with point to point resistance values which exceed 0.5 ohms.

C. Maintenance Materials: Deliver to the Commissioner at the Project Site the following quantities of items in size/color distribution as directed. Store in locations directed, in unopened containers and in a manner recommended by the manufacturer:

1. Service Switches

a. Provide three (3) sets of fuses of every size and type used in the switchboards.

b. Provide spare fuse cabinet in each switchboard room.

2. Tools

a. Deliver to the Commissioner's representative all special tools required for proper operation and maintenance of the equipment provided. Submit comprehensive list of tools.

3. Maintenance Manual

a. Assemble from manufacturer a complete manual consisting of the Service Switch shop drawings. The manual shall also contain manufacturers operation and maintenance instructions, as well as manufacturers suggested spare parts list and list of special tools required. Upon approval of shop drawings provide five (5) copies to the Commissioner.

1.6 AGENCY APPROVALS

A. Prior to installation of any work associated with the electric service, this Contractor shall prepare necessary drawings and pay fees for submission to applicable agencies and Utility Company for all service work. No work shall be installed without all required approvals, including local Utility Company.

1.7 SHORT CIRCUIT, ARC FLASH HAZARD AND COORDINATION STUDY

A. Prepare and submit for approval a short circuit, arc flash hazard and coordination study. Study shall be based on the actual overcurrent protective devices submitted for approval. Provide overcurrent devices to meet or exceed available short currents indicated in the short circuit study. Studies shall be prepared in compliance with IEEE 141, 241, 242, 399, 551, and 1584. NFPA 70 E, and International Electrical Testing Association Inc. specifications for Short Circuit, Coordination, and Arc Flash Studies.

B. Short circuit study shall, at a minimum, be based upon Utility Co. fault current impedances, Utility Co. voltage behind fault impedance, feeder impedances based upon contractors actual feeder distances, transformer impedances based upon units installed, and an allowance for motor contribution to the fault current. The resultant fault current shall be increased by a minimum of ten percent (10%) for use in selection of bus bracing and overcurrent device interrupting rating.

C. Study shall include Arc-Flash hazard analysis based upon recommended overcurrent protection devices and settings, for each low voltage switchboard, motor control center, distribution panel, lighting panel and each medium voltage switchboard and overcurrent device cubicle. Provide Arc-Flash label for each of the switchboards, panelboards, motor control center and medium voltage equipment cubicles to identify Flash protection boundary, Hazard risk category, Incident Energy and working distance.

D. Study shall be prepared, signed, and sealed by an Electrical Engineer licensed in New York State.

E. Study shall include all data upon which the study is based, as well as results used to select each overcurrent device rating.

F. Study shall be submitted with, or prior to the time of switchboard and panelboard submissions.

PART 2 PRODUCTS

2.1 UTILITY METERING

A. Where indicated on the drawings, furnish a separate barriered-off Utility Metering Compartment complete with hinged sealable door. Bus work shall include provisions for mounting Utility Co. current transformers and potential transformers or potential taps as required by Utility Company. Provide Service Entrance Label and provide necessary applicable service entrance features per New York City Electrical Code. Construction of metering cubicle section to be in accordance with Utility Co. specifications for secondary metering.

B. Manufacturers: C.T. cabinets and Service End boxes shall be as manufacturer by Lincoln Electric, American Switchboard, or Electro-Tech.

2.2 SERVICE SWITCH (OVER 800 AMPERES)

A. Devices shall be manually operated except devices requiring ground fault protection or shunt trip which shall be electrically operated unless otherwise indicated. All overcurrent devices shall be three (3) pole unless otherwise noted on drawings. All service switches shall be in NEMA 1 enclosure and suitable for use as Service Switch.

B. Bolted pressure switches

1. Application: Service Switches 1200 Amperes.
2. Protective devices shall be bolted pressure type as manufactured by Pringle. Each switch shall be UL listed for 100% of their continuous rating without exceeding 60°C rise over maximum of 40°C ambient.

3. Fusible switches shall be furnished with Class L fuse clips and UL labeled for 200,000 AIC. Furnish fuse sizes as shown on the drawings. Switch contact interrupting capacity shall be 12 times the continuous rating of the switch.
4. Fuse access door shall be mechanically interlocked with the operating handle. Operating handle shall have provisions for triple padlocking the switch in the open position.
5. The switch shall utilize a stored energy dead front operating mechanism including disk springs, compressed and released by the operating handle, to provide quick positive switching action independent of the speed of the operating handle.
6. Switches shall be manually operated Pringle Type QA.

C. Fusible Circuit Breaker
1. Application: Service Switches 1200 Amperes and larger.
2. Protective devices shall be high pressure contact type, furnished with Arc chute, positive On-Off indication, quick-make and emergency open-quick break.
3. Furnished with fuse mounting bolts with captive washers, Class L fuse clips and U.L. labeled for 200,000 AIC. Furnish fuse size as indicated on drawings.
4. Contacts shall be capable of making and breaking, a minimum of twelve (12) times the switch rating, without fuse assistance, at 600 volts, 60 Hz.
5. Fuse access door shall be mechanically interlocked with the operating handle. Operating handle shall have provisions for triple padlocking the circuit breaker in the open position.
6. Switch shall be UL listed per Standard 977, fused power Circuit Devices, and 100 percent rated.
7. Switches shall be equipped with electric trip (shunt trip).
8. Switches shall be G.E. HPC series or approved equal

D. Nameplates
1. Engraved nameplates shall be furnished for all service switches including control fuses and also for all indicating lights and instruments. Nameplates shall give load served, item designation and feeder and conduit sizes as well as switch size, fuse class and ampere rating
2. Where circuit breakers or fuses are applied in compliance with listed series combination ratings, the supply feeder overcurrent device and the load equipment (panelboard, distribution panel, MCC, etc.) shall have an additional nameplate with marking: CAUTION. SERIES COMBINATION SYSTEM RATED _____ AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED.

2.3 FUSES

A. Switches over 600A
1. UL class L current limiting types, capable of holding 500% rating for four (4) seconds.
2. Capable of operating properly on a short circuit of 300,000 symmetrical amperes Root Mean Square.
3. Fuses shall be Bussman System 300, low peak yellow KRP-C or approved equal.

B. Switches 600A and below
1. UL class RK1 dual element current limiting type, capable of holding 500% rating for 10 seconds.
2. Capable of operating properly on a short circuit of 300,000 symmetrical amperes Root Mean Square.

3. Time delay to permit starting current to pass through when sized at 125 percent of full load current.
4. Fuses shall be Bussman LPN-RK (250 V) and LPS-RK (600 V) or approved equal.

C. Provide fuses at a voltage beyond their operating voltage.

D. In order to satisfy required series rated interrupting capacity of downstream devices, contractor may utilize UL Class J fuses for feeders supplying circuit breaker type panels for all switches 600 Ampere and below. Fuses shall then be Bussman Low-Peak, LPJ_SP (600V) or approved equal.

2.4 SERVICE GROUNDING HARDWARE

A. Ground clamp.
1. Heavy duty type. Malleable Iron, hot dipped galvanized. O.Z. Gedney type "G" or approved equal.

B. Ground Hub
1. Malleable iron, hot dipped galvanized. O.Z. Gedney type GH-G, or approved equal. Use to terminate ground conductor run in conduit to ground clamp.

C. Ground Strap
1. For multiple ground conductor applications. Copper O.Z. Gedney type GES or approved equal. Use between ground clamp and multiple ground hubs.

D. Miscellaneous fittings shall be malleable iron, hot dipped galvanized.

E. Ground Terminals and Clamps
1. Ground rod with outer copper layer over a rigid steel core. Minimum : 3/4" X 10'-0" long. Comply with UL 467. Shall be Heary Bros. Copperweld or approved equal.
2. Four-wing copper ground plates shall be 3 1/2" X 18", 20 gauge, as manufactured by Heary Bros. or approved equal.
3. Utilize heavy-duty bronze with screw pressure type stainless steel bolts and nuts.

PART 3 EXECUTION

3.1 SECONDARY ELECTRICAL SERVICE

A. The secondary electrical service will be 120/208 volts, 3 phase, 4 wire, wye connected.

B. The contractor shall furnish and install all necessary sleeves, conduit, wire, manholes, service end box, copper details, limiters, etc. as indicated on drawings and as required by Utility Co. to facilitate receipt of electric service.

C. All work pertaining to service entrances and service and metering equipment shall be installed in accordance with the Utility Company requirements and in collaboration with their representative. Provide C.T. cabinets, constructed in accordance with Utility Companies standards and provide interconnect wiring to all Utility Company metering devices.

D. This contractor shall coordinate with Utility Company to ensure existing phasing is maintained with new Utility Service. Verify correct rotation of any existing 3 phase motor and pay all costs associated with any required re-phasing by Utility Company.

E. This Contractor shall furnish and install all fuses. Size as indicated on drawings. All overcurrent devices are three (3) pole unless otherwise noted.

F. Permanently affix Arc-Flash labels based upon specified short circuit, Arc-Flash hazard and coordination study.

3.2 GROUNDING

A. Ground service equipment, conduit systems, supports, cabinets, transformers, poles, fixtures, etc., and the grounded circuit conductors in accordance with the latest issue of the New York City Electrical Code and these Contract documents.

B. Provide bonding jumpers and wire, grounding bushings, clamps, etc., as required for complete grounding. Route ground conductors to provide the shortest and most direct path to the ground electrode system. Provide ground connections with clean contact surfaces by exothermic weld, or using listed pressure type connectors. Install ground conductors in conduit. Make readily accessible connections to a continuous, metallic, underground cold water piping system at a point where it enters the building. If this is not practical connect to a cold water pipe of adequate current carrying capacity as close as possible to the meter and provide a meter jumper. Make connections to the water pipe so as to ground the conduit enclosing as well as the conductor. Bond cold water pipe system to separate grounding electrodes, per Code requirements.
Provide two (2) ground rods or four wing type grounding plates and connect to service ground by grounding electrode conductor. Ground terminals shall be spaced minimum 8'-0" apart. Contractor may delete one (1) ground terminal if a maximum resistance of 5 ohms to ground with a single ground terminal can be demonstrated.

C. Structural steel which is not intentionally grounded shall be bonded to the grounded conductor at the service equipment, as required by code. Point of the attachment to building steel shall be accessible.

D. Provide grounding type bushings for feeder conduits which originate from the Main Distribution Panel and individually bond this raceway to the ground bus in the main distribution panel.

END OF SECTION

SECTION 26 24 16

ELECTRICAL DISTRIBUTION SYSTEM

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS
A. Work of this Section, as shown and specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment, hoisting rigging and services necessary to complete the Electrical Work as shown on the drawings and specified herein, including, but not limited to, the following:
1. Provide electrical distribution system in accordance with the Contract Documents.

1.3 RELATED WORK
A. Equipment Supports and nameplates are included in this division as specified in Section 260500.
B. Fuses for fusible power panels are included in this division as specified in Section 262400.

1.4 QUALITY ASSURANCE
A. Manufacturers Instructions:
1. In addition to the requirements of the specifications comply with manufacturers instructions and recommendations for all phases of work.
B. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions of the New York City Electric Code, and recommendations of the following:
1. Panelboards: Comply with Underwriters Laboratories Standards UL 50 for cabinets and boxes, UL 67 for panelboards, and UL 98 for enclosed and Dead front switches. National Electrical Manufacturer's Association Standard PB-1, PB-1.1 and KS1 for enclosed distribution switches. Federal Specifications W-P-115C.
2. Circuit Breakers: Comply with Underwriters' Laboratories Standards UL-489, and National Electrical Manufacturers' Association Standard AB-1, and Federal Specifications W-C-375B, and IEC 157-1.
3. Contactors: Comply with Underwriters Laboratories standards UL 508.
4. Fusible switches: Federal Specification W-C-865C.

1.5 SUBMITTALS

A. Shop Drawings: Submit shop drawings and manufacturers' data for the following items:

1. Panelboards:

a. Show main devices and lug sizes; branch circuit device sizes and arrangement; bus ampacities; dimensions and construction; gutter dimensions; protective coating; and all pertinent details of panel, enclosure, cover, and method of securing cover and lock.

b. Nameplates and Identification.

c. Panel directory.

d. Short Circuit Ratings: Indicate device short circuit ratings, indicate UL listed series ratings with integral or remote upstream overcurrent device. Indicate all bus short circuit bracing.

e. Prepare printed table for each panel for approval of engineer listing trip rating, and frame/switch rating, of each overcurrent device including main device if applicable. Also list device and panel U.L. listed short circuit rating, including series ratings with integral or remote upstream device.

2. Contactors: Dimensions, catalogue data, number of poles, coil voltage and contact ratings.

B. Test Reports. Submit certified test reports showing compliance of the following items in accordance with the contract documents.

1. All panelboards specified by this section shall be given a 60 Hz A.C., dielectric test. Dielectric test shall be phase to phase, and phase to ground, at twice rated voltage plus 1000 volts, but not less than 1500 volts, for one (1) minute, prior to shipment from factory. A test voltage which is 20% higher than that in the one minute test may be applied for one (1) second as an alternative to the one (1) minute test. The date of the test and the name and title of the individual certifying the test shall be clearly shown on a label affixed to the equipment.

C. Maintenance Materials

1. Manufacturer shall supply installation instructions and NEMA Standard PB1.1.

PART 2 PRODUCTS

2.1 LIGHTING AND POWER PANELS (CIRCUIT BREAKER TYPE)

A. Provide panels consisting of an assembly of branch circuit switching and protective devices mounted inside a dead front enclosure. Provide the number and size of these branch circuit devices as indicated on drawings.

B. Provide the following modifications and additional equipment as shown on the drawings or called for in specifications:
   1. Main circuit breakers.
   2. Split buses.
   3. Subfeed switches.
   4. Feed-through lugs. Provide for all two (2) section panels with one (1) main circuit breaker to facilitate connection to second section.
   5. Sub feed lugs. Provide for all two (2) section panels with no main circuit breaker to facilitate connection to second section.
   6. Integral remote control switches, and contactors.

C. Panelboard Interior:
   1. Rigid removable assembly of copper bus bars and interchangeable bolted branch circuit devices. Bus current rating shall be determined by heat rise test conducted in accordance with UL 67, or as required by applicable code whichever is more stringent.
   2. Bus bars drilled to permit branch circuit devices of all sizes and number of poles to be interchangeable and installed in any spare space of sufficient size, without disturbing adjacent units, removing main bus or branch circuit connectors, and without machining, drilling or tapping.
   3. Arrange bus in sequence or distributed phasing so that multipole circuit breakers can replace any group of single pole circuit breakers of the same size.
   4. Main bus current capacity shall be sized according to feeder switch size or panel main C.B. frame size where applicable.
   5. Provide full neutral unless otherwise noted on drawings in each panel. Provide ground bus/isolated ground bus and 200% rated neutral bus as noted on drawings.

D. Enclosure:
   1. Code gauge steel box galvanized.
   2. Weld a ground connector (O.Z. QGL) to inside of box, for all panels with isolated ground bus or no ground bus.
   3. Flush mounted in finished areas and where indicated. Surface mounted elsewhere.
   4. 20 inches wide minimum. Provide gutter space in accordance with applicable codes. Where feeder cable supplying the mains of a panel are carried thru its box, or where two (2) section panels are furnished with main circuit breakers in each section, the box shall be sized to provide the additional required wiring space for feeder and feeder tap to panel.

E. Front:
   1. Heavy code gauge steel as required to maintain panel face flat. Hinged door in door construction. Power panels may have hinged side gutters to provide access to interior in lieu of door in door construction. Doors shall have flush type cylinder lock with Yale 511 lock and #47 key. Front shall be cleaned, primed, and a finish coat of gray ANSI 61 paint applied.

F. Terminal Lugs:
   1. Locate main lugs properly at top or bottom, depending on where main feeder enters. Terminations shall be approved for 75°C rated wire.

G. Circuit Breaker Overcurrent Devices:
   1. Plastic molded case. Completely sealed enclosure. Toggle type operating handle. Trip ampere rating and ON/OFF indication clearly visible. Tested and labeled per UL-489.
   2. Silver alloy contacts with auxiliary arc-quenching devices.
   3. Bolt in place to main bus.
   4. Bolted type terminals Underwriters' Laboratories approved for copper conductors.
   5. 100 A to 400 A frame circuit breakers shall be thermal-magnetic trip-free, trip-indicating, quick-make, quick-break, with inverse time delay characteristics. Single handle and common tripping multipole breakers.
   6. 600 A frame and larger circuit breakers shall be solid-state trip, trip-free, trip indicating, quick-make/quick-break, with adjustable inverse time characteristics; Siemens Sensitrip Type, or approved equal of Square D or Cutler Hammer.
   7. Locate next to each breaker or space unit an individual number button. Where multiple-section panelboards occur, no two sections are to have like numbers.
   8. All circuit breakers shall be capable of being padlocked in the "OFF" position.

H. Minimum Frame and Electrical Panel Ratings:
   1. Minimum Frame Size shall be 100 Amperes.
   2. Circuit breaker interrupting capacity shall be as indicated on drawings, if no indication on drawings minimum shall be as specified herein.
   3. To obtain required A.I.C. capacities, panel branch and main circuit breakers shall be fully rated. Where permitted by Code, Contractor may utilize a U.L. listed series rating with the upstream overcurrent device protecting the panel feeder, equal to or greater than the required A.I.C. When U.L. listed series ratings with indicated upstream overcurrent device protecting the panel feeder are not permitted by Code, or do not meet the requirements specified on the drawings, contractor shall furnish a fully rated panel, or current limiting Main Circuit breaker in the panel and branch breakers which have a U.L. listed series A.I.C. which meets or exceeds the requirements. Minimum AIC shall be as follows:
      a. No 120/208 volt C.B. shall be rated less than 10,000 AIC.

b. Panels whose feeders are protected with fused overcurrent device.

	Lighting Panel	Power Panel
120/208	200,000 AIC up to 100A, Fuse 100,000 AIC over 100A Fuse	100,000 AIC

c. Panels whose feeders are protected with circuit breakers.

	Lighting Panel	Power Panel
120/208	22,000 AIC	42,000 AIC

4. Panels requiring main circuit breakers of the current limiting type, as noted on panel schedules or elsewhere in this specification shall have main breakers as follows in lieu of those specified under Item 2, above.

a. Circuit breakers shall be Siemens fuseless type and shall be current limiting, or approved equal of Square D or Cutler Hammer.

b. Breakers 100 ampere frame shall be thermal magnetic trip with inverse time current characteristics. Breakers 400 amp and 250 ampere frame shall be solid-state trip complete with built in current transformers solid-state trip unit and flux transfer shunt trip. Breakers shall have easily changed trip rating plugs with trip ratings as indicated on the drawings. Rating plugs shall be interlocked so they are not interchangeable between frames and interlocked such that the breaker cannot be latched with rating plug removed. In lieu of rating plugs, 20%-100% adjustable continuous current rating is acceptable. Adjustment screw shall be concealed. Breakers shall have built in test points for testing long delay and instantaneous and ground fault (where applicable) functions of the breaker by means of 120 volt operated test kit.

c. Current limiting circuit breakers shall protect all molded case breakers down stream as shown on the drawings. No deviations from this provision shall be acceptable. Manufacturer shall submit copy of UL series rated listing with downstream device, proving the protection, from both peak currents and I squared T energy. Utilize breakers providing the following UL Series listed short circuit ratings.

Main C.B. Trip	Short Circuit Rating
120/208 Volt Lighting Panel Up to 250 A	200,000 AIC
120/208 Volt Power Panel Up to 400 A	200,000 AIC

5. For lighting circuits controlled at panel, provide C.B.'s rated for switching load controlled i.e. fluorescent, HID etc.
6. Provide personal ground fault protection type C.B. (1 or 2 pole - 5 ma type) where required by code or called for on drawings and for all 125 volt single phase 15 and 20 ampere receptacles in bathrooms, on rooftops, in crawl spaces, within 6' of outside edge of sinks, located outdoors, and on kitchen countertops.
7. Provide equipment ground fault protection type C.B. (30 ma Type) where required by code or called for on drawings and for all pipe trace heating systems.

I. Provide main breakers in sections of multi-section panels and when two (2) or more panels are served by a common conductor or over-current device.

J. Panelboards shall be labeled with UL listed, series, short circuit rating. Series rating shall cover all trip ratings of installed frames. It shall state conditions of UL series rating including:
1. Size and type of upstream device.
2. Branch devices which can be used.
3. UL listed rating.

K. Panelboards shall be Siemens Sentron Type, as modified by these specifications or approved equal of Square D or Cutler Hammer.

2.2 FUSIBLE PANELBOARDS

A. Provide fusible panelboards consisting of an assembly of branch circuit switching and protective devices mounted inside a dead front enclosure. Provide the number and size of branch circuit devices as indicated on the drawings.

B. Main bus current capacity shall be sized according to feeder switch size. Bus shall be copper, sized to limit maximum temperature rise to 50°C above 40°C ambient, when conducting 100% of rated current, or as required by local code whichever is more stringent.

C. Bus Bracing: 100,000 ampere (Root Mean Square) continuous symmetrical short circuit current, unless otherwise noted on drawings.

D. All bus connections shall be made with two bolts or more.

E. The switch to bus connector links shall have current-carrying capacity equal to the maximum rating of the switch.

F. Switches shall be quick-make, quick-break type.

G. Fuseholders shall be of the high pressure type using a compression coil spring.

H. All switches shall be provided with an operating handle which can be triple padlocked in the "OFF" position.

I. A cover interlock shall prevent opening the switch door unless in the "OFF" position.

J. All switches shall be heavy duty type, horsepower rated.

K. All wire terminations shall be rated for minimum 75°C wire.

L. Shall be suitable for use as service equipment when containing Service Switches.

M. Connect Neutral bus to the ground bus by means of removable link when panel contains a Service Switch.

N. Enclosure:
1. Code gauge steel box galvanized.
2. Weld a ground connector (O.Z. Type QGL) to inside of box for all panels without ground bus.
3. Surface mounted.
4. Front shall be heavy code gauge steel as required to maintain panel face flat. Hinged door in door construction, or hinged side gutters. Front shall be primed and a finish coat of gray ANSI 61 paint applied.
5. Siemens Sentron Type F1 or F2 as modified by these specifications.

O. Manufacturer: Siemens or approved equal of Square D or Cutler Hammer.

2.3 CONTACTORS

A. Ratings and Features:
1. Mechanically held, opened and closed by electrical impulse to coils.
2. Rated to amperes for all classes of loads to 600 volts alternate current.
3. Interrupting capacities: Six (6) times rated current.
4. No derating required for use on high inrush loads.
5. Current coil magnetic blowouts on all poles.
6. Solderless lugs. All terminations shall be suitable for minimum 75°C wire.
7. Provide sufficient poles to operate on system as indicated.
8. Provide two (2) auxiliary contacts, field reversible.

B. Construction:
1. Pressure assembled electromagnets of laminated low-loss electric steel.
2. Machine-ground pole faces and shading coils for minimum alternating current hum level.
3. Current coil magnetic blowouts on all poles to insure high interrupting capacity with minimum contact erosion.
4. Self-cleaning, self-aligning contacts and including adjustable contact action and pressure.
5. Silver tungsten contact materials.

C. Operation:
1. Contactor coils close the contacts at minimum of 85% of normal voltage and withstand 10% over-voltage without damage to coil windings. Provide all contactors as alternate current coil operated or supplied with appropriate power supply. Provide all supplementary relays which are required to properly interface with control devices. Coil voltage as indicated by circuiting on drawings. Provide with auxiliary relay, or interface control module, for 2-Wire control where drawings indicate control via single pole toggle switch in lieu of momentary contact switch.

D. Enclosure:
1. NEMA 1 cabinet for surface mounting, front connected with flush dead back construction. Arrange contacts to be renewable from front of panel. Panel or switchboard mount when so indicated.

E. Momentary contract, remote control switches for operating contactors: ASCO Cat. #173A2 (Flush Mount), #173A3 (Surface Mount) or approved equal.

F. Manufacturers:

1. Automatic Switch Co. #911 (225-1000 amperes), #920 (30-225 amperes), #1255-166 (30 amperes); #917 (20 amperes or less) or approved equal of Siemens, Westinghouse, or Square D.

PART 3 EXECUTION

3.1 PANELBOARDS

A. Installation:

1. Install in accordance with manufacturers installation instructions and these specifications.
2. Mount Panel 4 feet to panel center but with maximum height of six (6) feet six (6) inches to handle of topmost switching device.
3. Mount surface type panels 1/4" off wall.
4. Where feeder cable supplying the mains of a panel are carried thru its box, or where two (2) section panel is furnished with main circuit breakers in each section; connect panels to main feeder by insulated parallel gutter taps (O.Z. Electrical Manufacturing Company - Type XTP with XTPC cover). Full size tap for two panels on a common feeder, half the main cable capacity for three or more panels per feeder.
5. Neatly arrange branch circuit wires and tie together in each gutter with waxed twine or Thomas & Betts nylon "Ty-Raps", or approved equal at minimum intervals.
6. Plug all knockouts removed and not utilized.

B. Indexing and Identification:

1. After installations are complete, provide and mount under sturdy transparent shield in the directory frame of each panel door, a neat, accurate and carefully typed directory properly identifying the lighting, receptacles, outlets and equipment each branch circuit breaker controls.
2. Include on directory, the panel identification, the cable and conduit size of panel feeder, and the feeder origination point.

C. Grounding

1. Bond grounding bushing on feeder conduit to ground lug (ground bus where specified) in panel with a copper ground conductor. Ground conductor shall be sized as follows:

Feeder	Required Ground Conductor
Up to 1/0	#6
2/0 - 3/0	#4
4/0 - 350 MCM	#2
500 - 600 MCM	1/0

2. Tie all branch circuit grounding bushings together by running a copper ground conductor through them and connecting to the panel grounding lug (ground bus where provided). Grounding conductor shall be sized as follows: based upon largest branch circuit.

Branch Circuit	Required Ground Conductor
Up to #2	#8
#1 thru 1/0	#6
2/0 thru 3/0	#4
4/0 thru 350 MCM	#2
500 thru 600 MCM	1/0

3.2 CONTACTORS

A. Install in accordance with manufacturers installation instructions and these specifications.

3.3 GROUNDING

A. Provide grounding in accordance with the New York Electrical Code requirements, and as noted on drawings and described elsewhere in specifications.

END OF SECTION

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SECTION 26 29 23

ELECTRICAL POWER EQUIPMENT

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS
A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 WORK INCLUDED
A. Work of this Section includes all labor, materials, equipment and services necessary to complete the Electrical Work as shown on the drawings and specified herein, including, but not limited to, the following:
1. Disconnect switches.
2. Manual motor starters.
3. Power wiring to devices.
4. Control wiring as indicated on contract documents or called for herein.

1.3 RELATED WORK
A. Equipment supports and nameplates as specified in Section 260500.
B. Basic materials and methods as specified in Section 260519.

1.4 QUALITY ASSURANCE
A. Manufacturer's Instructions:
1. In addition to the requirements of these Specifications, comply with manufacturer's instructions and recommendations for all phases of work including installation of equipment furnished by others.
B. Except as modified by governing codes and the Contract Documents, comply with the applicable provisions and recommendations of the following:
1. Disconnect Switches: Comply with National Electrical Manufacturer's Association Standard KS-1, Federal Standard W-S-865C, U.L.98, and U.L. 50.
2. Motor Controllers: Comply with Underwriters' Laboratories' Standard UL-508, and National Electrical Manufacturers' Association Standard ICS-2.

1.5 SUBMITTALS
A. Shop Drawings: Submit shop drawings and manufacturers data for the following items:
1. All disconnect switches.
2. All motor controllers.

1.6 PRODUCT HANDLING
A. Protection: Use all means necessary to protect the materials of this Section before, during and after installation and to protect the installed work and materials of all other trades.
B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Commissioner and at no additional cost to the Commissioner.

PART 2 PRODUCTS

2.1 DISCONNECT SWITCHES

A. Provide for each motor 1/2 horsepower and above, a rated disconnect switch.

1. Heavy-duty, single-throw knife switch with quick-make, quick-break mechanism, capable of full load operations. Horsepower rated and meeting National Electrical Manufacturers Association and U.S. Government Specifications for Class A switches.
2. Provide with contact arc-quenching devices, such as magnetic blowouts or snuffing plates. Provide self-aligning switchblades with silver alloy contact areas, designed so that arcing upon making and breaking does not occur on the final contact surfaces. Provide with high pressure, spring loaded contact. Mount switch parts on high grade insulating base. For disconnect switches serving hydraulic elevators provide one N.O. and one N.C. auxiliary contact rated for 10 Amperes Continuous.
3. Enclosure: National Electrical Manufacturers Association I with multiple knockouts on all sides and back, hinged door, and cover interlock which prevents door opening when switch is in ON position. Provide triple padlocking capability. Utilize National Electrical Manufacturers Association 3R (rain-tight) enclosure for exterior. Provide nameplate on each disconnect switch denoting equipment served.
4. Size, fusing and number of poles as shown on plans or as required by code for motor installed. Provide horsepower rated switch to match motor load if no size is shown. Use 3-pole plus solid neutral switches unless otherwise noted. Provide where indicated and where required by code.
5. Provide as suitable for use as Service Switch for all disconnect switches used as Service Switch.
6. Provide a ground lug, O.Z. Gedney type "KG" or approved equal for each disconnect and mount to enclosure.
7. Approved Manufacturers: Square D, or approved equal of Siemens or Cutler-Hammer.

2.2 MANUAL MOTOR STARTERS (Thermal Switch)

A. Provide each motor below ½ horsepower with a manual motor starter as indicated on drawings.

1. Starters shall have quick-make, quick-break toggle mechanism. Overload shall have field adjustment allowing up to ±10% variation in ratings at nominal heater value. Cutler Hammer MSTOI for single pole and MSTO2 for two pole application, or approved equal.
2. The Contractor shall obtain full load current data from approved shop drawings and furnish and install appropriate plug-in heater unit in accordance with manufacturer's recommendations.

3. Enclosure: NEMA 1 enclosures with knockouts. Cutler Hammer MSTOISN for surface mounting or MSTOIDN cover for flush mounting. Provide nameplate for each starter indicating equipment served. Provide NEMA 4 enclosure for outdoor application or where indicated to be weatherproof, Cutler Hammer MSTOIAH.

PART 3 EXECUTION

3.1 MOTOR POWER AND CONTROL WIRING

A. General:

1. Provide all motor power wiring, for both large and fractional HP motors, unless otherwise noted.
2. Install and wire all control devices that are part of the motor power circuit.
3. The requirements of this Section are applicable to all other power consuming devices.
4. Provide all control wiring for fan shutdown via fire alarm system as indicated on contract documents, or specified elsewhere. Control wiring for fan shutdown shall be terminated in starters and/or control panels per approved control wiring diagrams furnished by mechanical contractor.

B. Motor Power and Control Wiring

1. Install motor controllers where shown. Obtain the individual motor controllers, including approved manufacturers shop drawings, from the contractor who supplies them, and mount where shown on the plans. Check with other Contractors, Commissioner and approved shop drawings to make certain mounting location is correct and does not interfere with other equipment, and is in accordance with all manufacturer's requirements for mounting.
2. Insure that motor rotation is correct and reconnect if necessary.
3. Provide motor feeder to starter and from starter to motor, including connections and wiring to and from disconnect switch. Support conduit feeder descending from ceiling on flanged floor fitting with condulet type fitting connecting to motor with 24-inch minimum of liquid-tight flexible steel conduit. All electrical field connections to motors and package machinery shall be made with liquid-tight flexible conduit.
4. Motor disconnect switches shall be mounted on adjacent wall or from the floor with unistrut supports. Switches shall not be mounted on fan housings.

3.2 MISCELLANEOUS EQUIPMENT CONNECTIONS

A. All miscellaneous equipment will be provided under another Division; however, provide wiring for same, and make up all final electrical connections in accordance with manufacturer's recommendations. Where equipment in open areas is fed from wiring in the slab, terminate conduit in a flush coupling at the floor or suitable watertight box with telephone ell, from which point extend a rigid conduit nipple at least 8 inches above the floor, and provide flexible conduit connection to the equipment. Make all conduit connections at the floor watertight.

B. Provide flexible metal conduit or Type "S" rubber cords, pigtails, caps, etc., to provide an operating system. Provide all flexible cords with a grounding conductor. Ground all equipment.

C. See "OUTLETS" Section for mounting heights.

D. Refer to all equipment manufacturer Shop Drawings for details of equipment connections. Provide receptacles to match the cord and plug on the equipment furnished.

E. Provide a disconnect switch for all fixed appliances in accordance with Electrical Code.

F. No extra will be granted contractor for removal of indicated receptacle and reinstallation of correct receptacle due to contractors failure to ascertain actual receptacle configuration requirements of equipment furnished prior to installation of receptacles.

3.3 TESTING

A. Be available during tests of mechanical, miscellaneous equipment and elevator systems. Cooperate with all other contractors and make all electrical adjustments and changes required in the Work described above until equipment and systems are operating satisfactorily in the opinion of Commissioner.

3.4 GROUNDING

A. Provide grounding in accordance with the New York City Electrical Code requirements, and as specified herein.

B. Grounding of Motors: Bond grounding bushing on feeder conduit to ground log at starter and disconnect switch. Bond grounding bushing on feeder conduit and/or ground conductor to motor frame. If this is not feasible, extend ground conductor through an insulated bushed opening in the connection box and connect to motor base. Bond motor frame or base to metal piping or ductwork of system served by motor. Connection to piping or ductwork shall be accessible. Provide additional bonding jumper around any non-metallic fittings within 15'-0" of motor. Utilize Cadweld or approved equal listed compression type ground connections.

C. Provide full size equipment ground conductor for each variable frequency drive and associated motor. Provide full size equipment ground to each elevator motor. Increase indicated conduit size to accommodate same.

END OF SECTION

SECTION 28 31 11

AUTOMATIC FIRE ALARM SYSTEM

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

B. All exceptions taken to these Specifications, all variances from these Specification and all substitutions of operating capabilities or equipment called for in these Specification shall be listed in writing and forwarded to the Commissioner. Any such exception, variances or substitutions that were not listed and are identified in the submittal, shall be grounds for immediate disapproval without comment.

C. 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 Specifications shall include all labor, equipment, materials, hoisting, rigging and services necessary to furnish and install a complete automatic fire alarm system of the microprocessor based, software programmable, addressable type. It shall be addressable device point annunciated and also provide supervised wiring with all operations as herein described and as shown on Drawings. The system shall consist of, but not be limited to, the following:

1. Automatic fire alarm system control panel (FACP).
2. Remote annunciator panel and Zoning Indicator panel.
3. Addressable manual fire alarm stations. (One required - locate as directed by FDNY).
4. Addressable smoke sensors.
5. Addressable duct smoke sensors.
6. Addressable heat sensors.
7. Addressable Monitoring Modules (AMM's).
8. Non-addressable alarm initiating, supervisory and status monitored devices to be integrated into the fire alarm system via the Addressable Monitoring Module (AMM):
   a. Conventional (non-addressable) high temperature heat detectors (alarm initiating).
   b. Sprinkler waterflow alarm switches (alarm initiating).
   c. Sprinkler and standpipe valve tamper switches (supervisory).
   d. Fire, jockey, and/or booster pump status contacts (supervisory).
9. Devices to be controlled by the FACP relays, duct smoke sensor relays and/or individual Addressable Control Modules (ACM's):
   a. Connections to the central station agency transmitter (provided by this contractor) for alarm, supervisory and system trouble conditions.
   b. Air handling fan systems for shutdown.
   c. Fire/smoke dampers used for each fan system.

10. System battery backup operation of 24 hours standby condition and 15 minutes of alarm load condition.
11. All New York City required system peripherals, placards operating instruction/riser diagram and holders, etc. shall be included in the system price.
12. Fire alarm system and central office connection panel fused cut-outs.
13. Central Office Connection Panel including one (1) year of monitoring service.
14. As-built plans for the Fire Alarm System shall be prepared by this contractor and submitted to Commissioner.
15. Provide all documentation required for final FDNY approval, including:
    a. As-built plans. Submission shall include three (3) hard copy sets of floor plans with Fire Alarm Riser diagram acceptable to FDNY. Submission shall also include one set as-built CAD files on CD-Rom. Files shall be in a format readable by AutoCad 2007. As-built submission shall be made to Commissioner a minimum of fifteen (15) working days prior to initial FDNY field inspection. Engineer will verify as-builts and return to contractor a signed and stamped copy of the riser diagram for his use in obtaining final FDNY approval. Drawings found to not represent as-built conditions will be marked up and returned to contractor for correction, or held until field installation is verified by Engineer to match as-built drawings. Contractor shall be responsible for all delays and associated costs, including re-scheduling FDNY inspection caused by his failure to properly prepare or submit to Commissioner in a timely manner, as-built drawings of the Fire Alarm System.
    b. Final Input/Output Matrix prepared per Appendix A A10.6.2.3.(9) of NFPA 72. Matrix shall be included on As-Built Riser diagram drawing submission.
    c. Written statement of either licensed electrician or licensed Fire Alarm Installation Company certifying that a functional test has been conducted of the Fire Alarm System and that the system is operating as designed and in accordance with the Final Input/Output Matrix.
    d. Application for FDNY Inspection.
16. Removal of Existing Fire Alarm System: This shall include all existing fire alarm wiring and cables.
17. Provide Fire Watch per New York City Fire Department requirements for all spaces during times when existing fire alarm system is not in service and new fire alarm system has not received FDNY approval.

B. The fire alarm system shall have sufficient capacity to incorporate all equipment and perform all functions as stipulated within these Specifications and the Drawings of this project.

C. Drawings show the fire alarm system systematically. No added compensation shall be permitted for variations due to field conditions or the specific installation requirements of manufacturers.

1.03 APPLICABLE LISTINGS, CODES AND STANDARDS

A. Except as modified by governing codes and by the Contract Drawings, comply with the applicable provisions and recommendations of the following:

B. All equipment shall be UL listed for its intended use and conform to the latest UL Standards.

C. 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.
UL 521	Heat Detectors for Fire Protective Signaling Systems.
UL 464	Audible Signaling Appliances.
UL 1638	Visual Signaling Appliances.
UL 38	Manually Activated Signaling Boxes.
UL 346	Waterflow Indicators for Fire Protective Signaling Systems.
UL 1971	Standard for Signaling Devices for the Hearing Impaired
UL 1481	Power Supplies for Fire Protective Signaling Systems.
UL 1711	Amplifiers for Fire Protective Signaling Systems.

D. This installation shall comply with:

1. Americans with Disabilities Act (ADA).
2. National Electric Code, Article 760 with NYC Amendments.
3. National Fire Protection Association Standards: NFPA72-2002 with New York City Amendments.
4. International Standards Organization (ISO): ISO-9001.
5. Local Law 33 of 2007 (Chapter 9, Chapter 30, Mechanical Code, Appendix K & Q and other sections as they apply.)
6. Utilize listed and labeled Fire Alarm Equipment complying with the acceptance requirements of New York City Department of Buildings, Office of Technical Certification and Research.
7. The requirements of the City of New York Building Department and the City of New York Fire Department.
8. All wiring requirements shall meet the requirements of the Rules of the City of New York Section 4000-06.
9. The fire alarm system and its installation shall comply with all other local codes and authorities having jurisdiction.
10. This installation shall be filed in accordance with NYC FDNY "Fire Alarm Plan Submission" procedures per FDNY Technology Management Bulletin 10/2009.

1.04 RELATED DOCUMENTS

A. Prior to the commencement of work, the Contractor shall obtain all permits necessary for installation of the work. All permit costs and inspections fees shall be included as part of the required work.

B. Local requirements shall be adhered to with regard to submitting specifications, wiring diagrams, shop drawings and plans. Responsibility for furnishing the quantities of copies on cloth and/or paper, as directed by such requirements, shall be included as part of the Work of this Section.

C. Prior to commencement and after completion of work, the Contractor shall notify all authorities having jurisdiction.

D. The Contractor shall submit a letter of approval of the installation, from the local code authority, before requesting final acceptance of the system.

1.05 RELATED WORK

A. Supplemental General Requirements of Electrical Work as specified in Section 260519.

B. Basic materials and methods as specified in Section 260519.

C. 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. Duct smoke sensors to be installed by the Mechanical Contractor. See Division 23. They shall be furnished by and wired and connected to the fire alarm system by the Contractor.
2. Sprinkler waterflow alarm switches and valve tamper switches to be provided and installed by the Fire Protection/Sprinkler Contractor. See Division 21. They shall be wired and connected to the fire alarm system by the Contractor.
3. Fire, booster and/or jockey pump status contacts to be provided by the pump control equipment. See Division 23. They shall be wired and connected to the fire alarm system by the Contractor.
4. Coordinate with all other trade Contractors for interface with any and all other fire alarm system related devices.
5. New air handling fan control circuit termination points shall be identified by the Mechanical Contractor on his control wiring diagrams for use by this contractor.
6. New air handling fan and damper status monitoring sail switches and end switches shall be furnished by the Mechanical Contractor and wired and connected to the fire alarm system by this contractor.

1.06 QUALITY ASSURANCE

A. It is the intent of these Specifications to provide a complete fire alarm system that complies in all respects with the requirements of all applicable codes and standards. Equipment, material, installation practices, etc. that do not meet these requirements or do not meet the performance standards herein specified shall not be acceptable.

B. All fire alarm system equipment furnished under this Specification shall be UL listed, under the appropriate category, as the product of a single manufacturer. All control equipment shall be listed under UL Category UOJZ as a single control unit. The manufacturer shall have been engaged in the production of this type of equipment for at least three (3) years and have a fully equipped services organization within fifty (50) miles of the installation.

C. The equipment furnished under this Specification shall be equal in every way to that manufactured by EST whose catalog and model numbers are used to indicate the type and quality of design and materials as well as the operating features required. Only equipment manufactured by Edwards, Simplex and Notifier will be considered for substitution.

D. Equipment substitutions must meet or exceed all performance requirements. Only equipment manufactured by Edwards, Simplex and Notifier will be considered for substitution.

E. Acceptance of substitutions, based on submittal documents furnished by the Contractor, shall only be construed as permission to proceed with the installation pending final test and approval of the system. The Contractor shall continue to bear the liability for replacement of substituted equipment if, in the opinion of the Commissioner or Engineer, the substitute equipment fails to perform as specified or fails to meet approval of all authorities having jurisdiction within three (3) months after scheduled Project completion.

F. Numbers and types of fire alarm system devices or circuits shall be as shown on the Drawings and as herein described in this Section. Should any conflicts arise between and Drawings and/or this Section, regarding the quantities of devices or circuits, the higher quantity shall be considered as correct.

G. It is the Contractor's responsibility to submit acceptable equipment for review by the Engineer. The Contractor shall bear all liability for damages arising from his failure to submit equipment that meets these Specifications, including, but not limited to, penalties for failure to meet construction deadlines.

1.07 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 printed product data, catalog cuts and description of any special installation procedures. Poorly photocopied and/or illegible product data sheets shall not be acceptable and shall be rejected. 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. Shall include a specific, proposed point descriptor above each addressable device. Shall include a specific, discrete point address that 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) shall depict internal component placement and all internal and field termination points. Drawing shall provide a detail indicating where conduit penetrations shall be made, so as to avoid conflicts with internally mounted batteries. 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 alarm system. Upon contractors request, in accordance with Section 260500, Par. 1.17 requirements and execution of release form, CAD Files (AutoCAD) shall be provided by the consulting engineer for the use of the alarm system equipment vendor in the preparation of the Device Layout Plans. Device Layout 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 that corresponds with that indicated on the Riser Diagram. All notification appliances shall also be provided with a circuit address that 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.
7. Proposed system Input/Output Matrix prepared as set forth in Appendix A. Figure A.10.6.2.3.(a) of NFPA 72.
8. Contained in the title block of each drawing shall be symbol legends with device counts, wire tag legends, circuit schedules for all addressable and notification appliance circuits, the project name/address, and a drawing description which corresponds to that indicated in the drawing index on the coversheet drawing. A section of each drawing title block shall be reserved for revision numbers and notes. The initial submission shall be Revision 0, with Revision A, B, or C as project modifications require.

I. Battery calculations shall be provided on a per power supply/charger basis based on the current NYC Code, including New York City Building Code Appendix Q Section 106 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 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.

J. Provide voltage drop calculations to substantiate wire sizes.

K. Table of contents, product data sheets, sequences of operation, battery calculations, voltage drop calculations, installation instructions, licenses, NICET certifications and B-Size (blackline) reduced shop drawings shall be provided by the alarm vendor as part of a single, spiral bound submittal book. The submittal book shall have laminated covers indicating the project address, SED number, system type, and contractor. The book shall consist of labeled dividers, and shall not exceed 9 ½" in width, and 11 ½" in height. No less than three (3) sets of submittal booklets shall be provided to the consulting engineer for review and comment. Additional copies may be required at no additional cost to the project.

L. Scale drawing sets shall be submitted along with the submittal booklets. These drawings may be either D-Size or E-Size Blueline drawings and of a sufficient resolution to be completely read. Sets shall be bound and folded so as to not take up more than 100 square inches of space. No less than three (3) sets of scale drawing sets shall be provided to the consulting engineer for review and comment. Additional copies may be required at no additional cost to the project.

M. System Manual:

1. Upon final approval of all submittal documentation and shop drawings, the Contractor shall compile and assemble, with the equipment manufacturer's assistance, a complete system manual consisting of: site specific operating and maintenance instructions, manufacturer's catalog pages of all equipment and components, all as-built wiring and conduit diagrams (both floor plan and riser types) and a manufacturer's suggested spare parts list. The Contractor shall provide one (1) copy to the Engineer for approval.
2. Upon Engineer approval of the system manual, the Contractor shall provide and turn over to the Commissioner's representative three (3) copies of the approved system manual.

PART 2.00 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. The catalog numbers used are those of Edwards Systems Technology (EST) by GE Security "or approved equal", and constitute the type and quality of equipment to be furnished.

B. If equipment of another manufacturer is to be submitted for approval as equal, the contractor shall list all exceptions taken to these Specifications, all variances from these Specifications and all substitutions of operating capabilities or equipment called for in these Specifications and forward said list to the Engineer. Any such exceptions, variances or substitutions that were not listed are identified in the submittal, shall be grounds for immediate disapproval without comment. Final determination of compliance with these Specifications shall rest with the Engineer, who, at his discretion, may require proof of performance.

C. Alternate product submissions based upon use of a product line considered proprietary in its distribution, design, application software, or ongoing maintenance and repair shall not acceptable. Proof of a product's non-proprietary nature shall be the burden of the contractor, and shall be in the form of written documentation. The determination of a product's compliance to this requirement shall be exclusively that of the Consulting Engineer.

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.

E. The Sprinkler / Smoke Detection System supplied under this specification shall be microprocessor-based. All Control Panel Assemblies and connected Field Appliances shall be both designed and manufactured by the same company, and shall be tested and cross-listed as compatible to ensure that a fully functioning Life Safety System is designed and installed.

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. Addressable Monitor Modules (AMM's) shall be provided to connect to and provide individually addressed alarm initiating, supervisory or status monitoring circuits for non-addressable devices such as sprinkler waterflow alarm switches, sprinkler valve tamper switches, etc. Each Addressable Monitor Module (AMM) shall provide one (1) NFPA Standard 72, Style B, two-wire (Class B), supervised circuit. Assignment of individual AMM for alarm, supervisory or status monitor operation shall be accomplished during the programming of the FACP central processing unit (CPU) software. Each of the following types of non-addressable devices shall be provided with an individual AMM for alarm initiating, supervisory or status monitoring, typically as follows:

1. Boiler Room heat detectors: Provide one (1) alarm initiating AMM for the Boiler Room heat detectors.
2. Sprinkler waterflow alarm switches: Provide one (1) alarm initiating AMM for each sprinkler waterflow alarm switch.
3. Sprinkler valve tamper switches: Provide one (1) supervisory AMM for each sprinkler valve tamper switch.
4. Fire Pump/Booster Pump: Provide *four (4) status monitoring AMM's for each fire/booster pump. (Pump running, phase failure, phase reversal and controller connected to emergency service).

D. FACP relays shall be provided to connect to and provide fire alarm system controls of associated equipment such as central station transmitter connections. Each relay shall provide at least one (1) single-pole, double-throw (SPDT) contact. Assignment of individual relays for control operation shall be accomplished during the programming of the FACP central processing unit (CPU) software. Each of the following types of equipment shall be provided with a control relay contact, typically as follows:

1. Central station agency connections: Provide seven (7) contacts (system manual alarm system waterflow alarm, system smoke/heat alarm, [pump running, fire pump power failure], system supervisory off-normal condition and system trouble condition) for connection to the central station agency transmitter.

E. Duct smoke sensor addressable relays and Addressable Control Modules (ACM) shall be provided to connect to and provide fire alarm system control of remote equipment such as air handling systems, elevator controls, etc. Each relay shall be individually addressable and provide double-pole, double-throw (DPDT) contacts, fused, (0.6 A.) @ 120 VAC or 30 VDC (Non-inductive). Assignment of individual relays for control operation shall be accomplished during the programming of the FACP central processing unit (CPU) software. Provide auxiliary load relay controlled by addressable relay. Auxiliary load relay contacts shall be rated for 20A @ 120 volts, when interrupting circuits protected by 15 Ampere or 20 Ampere, 120 volt circuit breakers.

Auxiliary load relay contacts may be rated 10 Amperes when interrupting fused control circuits where fuse does not exceed 10 Amperes at 120 volts.

Each of the following types of remote equipment shall be provided with an addressable control module and auxiliary relay as follows:

1. Air handling fan systems: Provide one (1) shutdown addressable control module with auxiliary relay for each supply and for each return air handling fan 2000 CFM or larger. Auxiliary relay contact shall be programmed normally closed, open on alarm.

F. The FACP shall provide each of the following types of equipment and circuits associated with the fire alarm system with a manual control switch, as required by the functional requirements of these Specifications, which shall be typically as follows:

1. Central station alarm disconnect: Provide one (1) switch for central station alarm disconnect.
2. Air handling fan systems restart: Provide one (1) start switch to allow air handling system to be restarted after the fire alarm system has been reset to normal.

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.

H. Each control panel shall have a dedicated 20Amp-120VAC feed. An appropriate fuse cut out shall be included, wired as indicated in the Building Code for the City of NY.

2.03 FIRE ALARM SEQUENCE OF OPERATIONS

A. Operation of any manual fire alarm station or alarm activation of any smoke sensor, duct smoke sensor, heat sensor/detector, switch, fire suppression system alarm contact or other alarm initiating device shall automatically:

1. Sound a pulsing audible signal and flash the general alarm LED indicator at the fire alarm control panel (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.
2. Display a general alarm indication and system status summary (numbers of present alarm, supervisory and/or trouble conditions) on the FACP alphanumeric, liquid crystal display (LCD). Pressing the alarm acknowledge key shall display, for thirty (30) seconds, the individual device/circuit display, to include the "alarm" status, "device type" indication and custom label (up to forty characters and spaces), for the device reporting the alarm condition. At the end of the thirty (30) second period, the general alarm indication and system status summary shall again be displayed. The individual device display may be recalled at any time by repressing the alarm acknowledge key or until the alarm condition is reset to normal.
3. Enter the custom label for the device reporting the alarm condition with the time and date of alarm activation into the FACP historical alarm log for future recall/review.
4. Sound an audible signal at the remote Zoning Indicator panel. The audible signal may be silenced during the alarm condition.
5. At the remote Zoning Indicator panel visually indicate zone and type of alarm (smoke detection, sprinkler water flow, manual fire alarm pull station, or other automatic detection device or fire suppression system). Zone shall not exceed 22,500 square feet in area or 300 linear feet in any direction. Visual indication shall not be cancelled by operation of the audible alarm silence switch.
6. Operate control relay contacts to shutdown all air handling systems that serve the building. Air handling systems shall not be permitted to restart to normal operation from the simple operation of the system reset switch. Two separate manual reset operations shall be required after fire alarm system has been reset to normal. A separate air handling system restart switch shall be provided on the FACP, which shall enable the manual local reset of each individual system.
7. Operate control relay contact to initiate the transmission of an alarm indication to the central station agency transmitter.

B. Alarm activation of any sprinkler waterflow alarm switch shall automatically:

1. Provide those operations as listed in 2.03 A, 1 through 7.

C. Alarm activation of an elevator machine room smoke detector shall automatically:

1. Provide those operations as listed in above 2.03 A, 1 through 7.

D. Alarm activation of any sprinkler waterflow alarm switch shall automatically:
   1. Provide those operating as listed in 2.03 B1.

E. System Supervisory Operation
   1. The following equipment or devices associated with the fire alarm system shall be supervised for normal and off-normal conditions:
      a. Sprinkler and standpipe valve tamper switches.
      b. Fire, jockey and/or booster pump "Running", and "Power/Phase Failure" contact.
   2. Activation of any of the above listed supervisory devices, contracts or switches to an off-normal condition shall automatically:
      a. Sound an audible signal and flash the supervisory service LED indicator at the fire alarm control panel (FACP). Pressing the supervisory acknowledge key on the FACP shall silence the audible signals and continuously light the LED indicator, during the off-normal condition. Subsequent off-normal conditions shall resound the audible signals and again flash the LED. Each off-normal condition must be individually acknowledged.
      b. Display a general supervisory indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the FACP alphanumeric, liquid crystal display (LCD). Pressing the supervisory acknowledge key shall display, for thirty (30) seconds, the individual device/circuit display, to include the "off-normal" status, "device type" indication and custom label (up to forty characters and spaces, for the device reporting the off-normal condition. At the end of the thirty (30) second period, the system status summary shall again be displayed. The individual device display may be recalled at any time by repressing the supervisory acknowledge key or until the off-normal condition is restored to normal.
      c. Enter the custom label for the device reporting the off-normal condition with the time and date of off-normal activation into the FACP historical trouble log for future recall/review.
      d. Sound an audible signal at the remote zoning indicator panel. The audible signal may be silenced during the off-normal condition.

e. Display a general trouble indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the remote zoning indicator panel alphanumeric, liquid crystal display (LCD). Pressing the supervisory acknowledge key shall display, for thirty (30) seconds, the individual device display, to include the "off-normal" status, "device type" indication and custom label (up to forty characters and spaces, for the device reporting the off-normal condition. At the end of the thirty (30) second period, the system status summary shall again be displayed. The individual device display must be recalled at any time by repressing the supervisory acknowledge key or until the off-normal condition is restored to normal.

f. Operate a control relay contact to initiate the transmission of a supervisory indication to the central station agency transmitter.

F. System Supervision For Trouble Conditions

1. The fire alarm system wiring (except control wiring to fans, etc.) shall be electrically supervised to automatically detect and report trouble conditions to the fire alarm control panel (FACP).

2. Any opens or grounds on Addressable Monitor Module (AMM) alarm initiating, supervisory or status monitoring circuit wiring and any opens, grounds or shorts across addressable data communications, remote annunciator panel data communications and/or alarm indicating appliance (signal) circuit wiring shall initiate a system trouble condition.

3. System addressable devices shall be supervised for placement and normal operation. Removal of an addressable device or the failure of its internal electronic circuitry shall initiate a system trouble condition.

4. Operation of the central station agency alarm disconnect switch or any manual control commands that alter the system from its normal programmed standby configuration shall initiate a trouble condition.

5. The following FACP states shall initiate a system trouble condition:
   a. Primary 120 VAC power loss.
   b. Battery disconnect.
   c. Battery low voltage.

6. Trouble conditions shall automatically:
   a. Sound an audible signal and flash the general system trouble LED indicator at the fire alarm control panel (FACP). The system trouble bell shall also ring. Pressing the trouble acknowledge key on the FACP shall silence the audible signals and continuously light the LED indicator, during the trouble condition. Subsequent trouble conditions shall resound the audible signals and again flash the LED. Each trouble condition must be individually acknowledged. The audible trouble signals shall also resound at programmable time intervals to remind the system operator that the trouble condition(s) still exists.

b. Display a general trouble indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the FACP alphanumeric, liquid crystal display (LCD). Pressing the FACP trouble acknowledge key shall display, for thirty (30) seconds, the individual device or circuit display, to include the "trouble" status, "device/circuit type" indication and custom label (up to forty characters and spaces, for the device or circuit reporting the trouble condition. At the end of the thirty (30) second period, the general trouble indication and system status summary shall again be displayed. The individual device/circuit display may be recalled at any time by repressing the trouble acknowledge key or until the trouble condition is repaired.

c. Enter the circuit/device custom label with time and date of trouble condition occurrence into the FACP historical trouble log for future recall/review.

d. Sound an audible signal at the remote annunciator panel. The audible signal may be silenced during the trouble condition.

e. Display a general trouble indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the remote annunciator panel's alphanumeric, liquid crystal display (LCD). Pressing the trouble acknowledge key shall display, for thirty (30) seconds, the individual device or circuit display, to include the "trouble" status, "device/circuit type" indication and custom label (up to forty characters and spaces, for the device or circuit reporting the trouble condition. At the end of the thirty (30) second period, the general trouble indication and system status summary shall again be displayed. The individual device/circuit display may be recalled at any time by repressing the trouble acknowledge key or until the trouble condition is repaired.

f. Operate a control relay contact to initiate the transmission of a trouble indication to the central station agency transmitter.

G. Air Handling Systems Control

1. Air handling systems shall be automatically controlled from the fire alarm system control relays, as previously described.

2. In addition, the following air handling system related functions shall be provided:

a. Air handling systems shall not be permitted to restart to normal operation from the simple operation of the system reset switch. A separate manual reset operation shall be required after fire alarm system has been reset to normal. A separate air handling system reset switch shall be provided on the FACP which shall enable the restart of the fan systems.

2.04 SUPPORT FOR INSTALLER AND COMMISSIONER MAINTENANCE

A. Provide a coded one-man walk test feature. Allow audible or silent testing. Signal alarms and troubles during test. Allow receipt of alarms and programmed operations for alarms from areas not under test.

B. Provide internal system diagnostics and maintenance user interface controls to display/report the power, communication, and general status of specific panel components, detectors, and modules.

C. Provide loop controller diagnostics to identify common alarm, trouble, ground fault, Class A fault, and map faults. Map faults include wire changes, device type changes by location, device additions/deletions and conventional open, short, and ground conditions. Ground faults on the circuit wiring of remote module shall be identified by device address.

D. Allow the user to display/report the condition of addressable analog detectors. Include device address, device type, percent obscuration, and maintenance indicator. The maintenance indicator shall provide the user with a measure of contamination of a device upon which cleaning decisions can confidently be made.

E. Allow the user to report history for alarm, supervisory, monitor, trouble, smoke verification, watchdog, and restore activity. Include Facility Name, Licensee, Project Program Compilation date, Compiler Version, Project Revision Number, and the time and date of the History Report.

F. Allow the user to disable/enable devices, zones, actions, timers and sequences. Protect the disable function with a password.

G. Allow the user to activate/restore outputs, actions, sequences, and simulate detector smoke levels.

H. Allow the service user to enter time and date, reconfigure an external port for download programming, initiate auto programming and change passwords. Protect these functions with a password.

I. THE END-USER SHALL RETAIN COMPLETE RIGHTS AND OWNERSHIP TO ALL SOFTWARE RUNNING IN THE SYSTEM. The alarm equipment vendor shall provide useable hard and soft copies of the software database to the End-User at the end of the warranty period. The database provided shall be useable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted use and modification of the database. The Consulting Engineer shall define the extent of hardcopy database documentation to be provided.

2.05 UL LISTED AND APPROVED EQUIPMENT

A. Control Panel Requirements:
The control panel or panels and all system devices (pull stations, smoke and heat detectors, etc. shall be Edwards Systems Technology (EST) by GE Security type EST3 series, Simplex, Notifier, or approved equal). The Fire Alarm vendor may substitute the GE security EST2 panel for systems under 200 fire alarm devices. All under one label "UL listed and approved" for the use of fire alarm systems in this area of the United States of America. The operating controls shall be located behind locked door with viewing window. All control modules shall be labeled, and all zone locations shall be identified.

B. System Controllers
The main controller 3-CPU shall be supervised, site programmable, and of modular design supporting up to 125 detectors and 125 remote modules per addressable Signaling line Circuit (SLC). The CPU shall support up to 10 SLC's per panel for a total system capacity of 2500 Intelligent Addressable points. The system shall be designed with peer-to-peer networking capability for enhanced survivability, with support for up to 64 modes, each with up to 2500 points and an overall capacity of 160,000 points. The cabinets shall be steel, with a red finish.

C. The system shall store all basic system functionality and job specific data in non-volatile memory. All site specific and operating data shall survive a complete power failure intact. Passwords shall protect any changes to system operations.

D. The Main Controller Module shall control and monitor all local or remote peripherals. It shall support a large 960 character LCD, power supply, remote LCD and zone display annunciators, printers, and support communication interface standard protocol (CSI) devices such as color computer annunciators and color graphic displays. Remote LCD annunciators shall also display each and every point in the system and be sized with the same number of characters as in the main FACP display.

E. The panel shall have an interface module for remote site monitoring. The module shall have a dialer (alarm communicator transmitter (DACT)) module to transmit alarm, supervisory and trouble signals to a Central Monitoring Station (CMS). The DACT shall support dual telephones lines, Contact I.D. communications, and configured for dual tone multi-frequency (DTMF) or pulse modes. It shall be possible to delay AC power failure reports, auto test call, and be site programmable. The dialer shall be capable of transmitting every individual alarm condition to the central station.

F. The system shall have built-in automatic system programming to automatically address and map all system devices attached to the main controller. A minimum default single stage alarm system operation shall be supported with alarm silence, event silence, drill, lamp test, and reset common controls.

G. Advanced Windows-based System Definition Utility with Program Version Reporting to document any and all changes made during system start-up or system commissioning shall be used to maintain site specific programming. Time and Date Stamps of all modifications made to the program must be included to allow full retention of all previous program version data. It shall support programming of any input point to any output point. The system shall support the use of Bar Code readers to assist custom programming functions. It shall allow authorized customization of fundamental system operations using initiating events to start actions, timers, sequences and logical algorithms. The system program shall meet the requirements of this project, current codes and standards, and satisfy the local Authority Having Jurisdiction.

H. The system shall support distributed processor intelligent detectors with the following operational attributes; integral multiple differential sensors, automatic device mapping, electronic addressing, environmental compensation, pre-alarm, dirty detector identification, automatic day/night sensitivity adjustment, normal/alarm LEDs, relay bases, sounder bases and isolator bases.

I. The system shall use full digital communications to supervise all addressable loop devices for placement, *correct location*, and operation. It shall allow swapping of "same type" devices without the need of addressing and impose the "location" parameters on replacement device. It shall initiate and maintain a trouble if a device is added to a loop and clear the trouble when the new device is mapped and defined into the system.

J. Each controller shall contain a RS232 printer/programming port for programming locally via an IBM PC. When operational, each controller shall support a printer through the RS232 port and be capable of message routing.

K. System circuits shall be configured as follows: Addressable analog SLC loops Class B (Style 4); Initiating Device Circuits Class B; Notification Appliance Circuits Class B; Network Communications Class B; Annunciator Communications Class B.

L. Single stage operation shall be provided.

M. The system shall have a UL Listed Detector Sensitivity test feature, which will be a function of the smoke detectors and performed automatically every 4 hours.

N. The system shall support 100% of all remote devices in alarm and provide support for a 100% compliment of detector isolator bases.

O. All panel modules shall be supervised for placement and return trouble if damaged or removed.

P. The system shall have a CPU watchdog circuit to initiate trouble should the CPU fail.

Q. The Fire Alarm / Life Safety System shall incorporate the ability to code Notification Appliance circuits per the NYC building code.

R. Audible notification appliances shall be affected by signal silence features. Visual signal appliance shall not be affected by signal silence features.

S. User Interface

The 3-LCDXL Display Module shall be of membrane style construction with a 24 line by 40-character (960 total characters) Liquid Crystal Display (LCD). The LCD shall use super-twist technology and backlighting for high contrast visual clarity and a colored gray/black and white display. In the normal mode the LCD shall display the time, a customer facility name, and the number of history events. In the alarm mode the LCD display the total number of events and the type of event on display. The LCD shall reserve 42 characters of display space for each user custom message by addressable device. The module shall have visual indicators for the following common control functions; Power, Alarm, Supervisory, Monitor, Trouble, Disable, Ground Fault, CPU fail, and Test. There shall be common control keys and visual indicators for reset, alarm silence, panel silence, and drill. Provide four pairs of display control keys for selection of event display by type (alarm, supervisory, monitor and trouble) and forward / backward scrolling through event listings. The operation of these keys shall be integrated with the related common control indicators to flash the indicators when undisplayed events are available for display and turn on steady when all events have been displayed. The LCD shall display the first event of the highest priority as well as the previous seven (7) alarm events "hands free" in chronological order so that the arriving firefighter may track the fires progression. Provide system function keys; status, reports, enable, disable, activate, restore, program, and test. The module shall have a numeric keypad, zero through nine with delete and enter keys.

As an alternate if the above cannot be provided, provive UL-Listed 864 PC graphics display.

T. Power Supplies

The power supply shall be a high efficiency switch mode type with line monitoring to automatically switch to batteries for power failure or brown out conditions. The automatic battery charger shall have low battery discharge protection. The power supply shall provide internal power and 24 Vdc at 7.0A continuous for notification appliance circuits. The power supply shall be capable of providing 7A to output circuits for a maximum period of 100 ms. All outputs shall be power limited. The battery shall be sized to support the system for 24 hours of supervisory and trouble signal current plus general alarm for 5 minutes.

U. Auxiliary power supplies shall be a high efficiency switch mode type with line monitoring to automatically switch to batteries for power failure or brown out conditions. The automatic battery charger shall have low battery discharge protection. The power supply shall provide internal power and 24 Vdc at 7.0A continuous for notification appliance circuits. The power supply shall be capable of providing 7A to output circuits for a maximum period of 100 ms. All outputs shall be power limited. The battery shall be sized to support the system for 24 hours of supervisory and trouble signal current plus general alarm for 5 minutes.

V. Network alphanumeric annunciators shall be located throughout the facility as indicated on the plans. The system shall have the capacity to support 64 network annunciators or EST3 network panel nodes. Each annunciator shall contain a supervised, back lit, liquid crystal with a minimum of 8 line with 21 characters per line. Where required, the annunciator shall include additional zonal annunciation and manual control without additional enclosures. The annunciator shall support full ability to serve as the operating interface to the system and shall include the following features; Matched appearance with other system displays Each LCD Display on each node (cabinet) in the system shall be configurable to show the status of any or all of the following functions anywhere in the system:
Alarm
Supervisory
Trouble
Monitor

W. Each zoning indicator panel must be capable of supporting custom messages as well as system event annunciation. It must be possible to filter unwanted annunciation of trouble, alarm or supervisory functions on a by point or by geographic area. The annunciators shall be mounted in stand-alone enclosures or integrated into the network panels as indicated on the plans.

X. Provide provision in the control panel for future recall of elevator upon alarm from elevator machine room smoke detector, elevator shaft smoke detector or elevator lobby smoke detector.

2.06 COMPONENTS

A. Intelligent Devices—General

Each remote device shall have a microprocessor with non-volatile memory to support its functionality and 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.

Each detector microprocessor shall contain an environmental compensation algorithm that identifies and sets ambient "Environmental Thresholds" approximately six times an hour. The microprocessor shall continually monitor the environmental impact of temperature, humidity, other contaminates 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 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. Fixed Temperature/Rate of Rise Heat Detector, SIGA-HRS

Provide intelligent combination fixed temperature/rate-of-rise heat detectors SIGA-HRS. The heat detector shall have a low mass thermistor heat sensor and operate at a fixed temperature and at a temperature rate-of-rise. It shall continually monitor the temperature of the air in its surroundings to minimize thermal lag to the time required to process an alarm. The integral microprocessor shall determine if an alarm condition exists and initiate an alarm based on the analysis of the data. Systems using central intelligence for alarm decisions shall not be acceptable. The intelligent heat detector shall have a nominal fixed temperature alarm point rating of 135^{o}F (57^{o}C) and a rate-of-rise alarm point of 15^{o}F (9^{o}C) per minute. The heat detector shall be rated for ceiling installation at a minimum of 70 ft (21.3m) centers and be suitable for wall mount applications.

D. Photoelectric Smoke Detector, SIGA-PS

Provide intelligent photoelectric smoke detectors SIGA-PS. 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:

1. Temperature: 32^{o}F to 120^{o}F (0^{o}C to 49^{o}C)
2. Humidity: 0-93% RH, non-condensing
3. Elevation: no limit

E. Standard Detector Mounting Bases, SIGA-SB / SIGA-SB4
Provide standard detector mounting bases SIGA-SB 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:

1. Removal of the respective detector shall not affect communications with other detectors.
2. 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.
3. 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.

F. Duct Detector, Model SIGA-SD: Provide model SIGA-SD 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 amperage contact relays as 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 remote test station model SD-TRK for each duct type smoke detector.

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:

1. Temperature: 32^{O}F to 120^{O}F (0^{O}C to 49^{O}C).
2. Humidity: 0-93% RH, non-condensing.

H. Single Input Module, SIGA-CT1

Provide intelligent single input modules SIGA-CT1. The Single Input Module shall provide one (1) supervised Class B input circuit 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 single input module shall support the following circuit types:

1. Normally-Open Alarm Latching (Manual Stations, Heat Detectors, etc.)
2. Normally-Open Alarm Delayed Latching (Waterflow Switches)
3. Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)
4. Normally-Open Active Latching (Supervisory, Tamper Switches)

I. Dual Input Module, SIGA-CT2

Provide intelligent dual input modules SIGA-CT2. 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:

1. Normally-Open Alarm Latching (Manual Stations, Heat Detectors, etc.)
2. Normally-Open Alarm Delayed Latching (Waterflow Switches)
3. Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)
4. Normally-Open Active Latching (Supervisory, Tamper Switches)

J. Waterflow/Tamper Module, SIGA-WTM

Provide intelligent waterflow/tamper modules SIGA-WTM. 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 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers.

K. Single Input Signal Module, SIGA-CC1

Provide intelligent single input signal modules SIGA-CC1. The Single Input (Single Riser Select) Signal Module shall provide one (1) supervised Class B output circuit capable of a minimum of 2 personalities, each with a distinct operation. When selected as a telephone power selector, the module shall be capable of generating its own "ring tone". The module shall be suitable for mounting on North American 2 ½" (64mm) deep 2-gang boxes and 1 ½" (38mm) deep 4" square boxes with 2-gang covers, or European 100mm square boxes. The single input signal module shall support the following operations:

1. Audible/Visible Signal Power Selector (Polarized 24 Vdc @ 2A, 25Vrms @50w or 70 Vrms @ 35 Watts of Audio)
2. Telephone Power Selector with Ring Tone (Fire Fighter's Telephone)

L. Control Relay Module, SIGA-CR
Provide intelligent control relay modules SIGA-CR. 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 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers.

M. Intelligent Manual Pull Station - (One (1) required)
It shall be possible to address each Signature Series fire alarm pull station without the use of DIP or rotary switches. Devices using DIP switches for addressing shall not be acceptable. The manual stations shall have a minimum of 2 diagnostic LEDs mounted on their integral, factory assembled single or two stage input module. A green LED shall flash to confirm communication with the loop controller. A red LED shall flash to display alarm status. The station shall be capable of storing up to 24 diagnostic codes which can be retrieved for troubleshooting assistance. Input circuit wiring shall be supervised for open and ground faults. The fire alarm pull station shall be suitable for operation in the following environment:

1. Temperature: 32°F to 120°F (0°C to 49°C)
2. Humidity: 0-93% RH, non-condensing

The manual station shall be painted with a one inch wide (1" W.) white stripe running diagonally from the upper left corner to the lower right corner.
Manual Pull Station, SIGA-270
Provide intelligent single action, single stage fire alarm stations SIGA-270. The fire alarm station shall be of metal construction with an internal toggle switch. Provide a locked test feature. Finish the station in red with silver "PULL IN CASE OF FIRE" English lettering. The manual station 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. All manual stations which, when activated dial the central station, shall be mechanically identified with a white stripe per NYC code.

N. Remote Relays
Multi-Voltage Control Relays, MR-100 Series
Provide remote control relays connected to supervised ancillary circuits for control of fans, dampers, door releases, 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.

O. Multi-Voltage Control Relays, MR-200 Series
Provide remote control relays connected to supervised ancillary circuits for control of fans, dampers, door releases, 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.

P. Operating Instruction/Riser Diagram Holders
Shall be red painted, steel, frame holder with clear, Acrylic window with nine inch by twelve inch (9" x 12") dimensions. One (1) holder shall be provided for the fire alarm control panel (FACP)/system operating instructions and one (1) holder shall be provided for a reduced copy (8-1/2" x 11") of the fire alarm system riser diagram. The operating instruction and riser diagram holders shall be mounted adjacent to the fire alarm control panel (FACP).

Q. Fire Alarm System Fused Cut-out
1. The Contractor shall provide an individual cartridge fuse cut-out panel with three (3) poles and a removable, solid copper, neutral bar in fuse gap.
2. Fused cut-out shall be provided with silver sand fuses, current limiting type with an interrupting capacity rating of 200,000 amps (r.m.s. symmetrical). The size of the fuses shall not be less than thirty Amperes (30.0 A.).
3. The fused cut-out panel shall bear an engraved white-core phenolic or bakelite identification nameplate stating in minimum one-quarter inch (1/4") high white letters on a red background "FIRE ALARM FUSED CUT-OUT".
4. Contractor shall bring single phase three (3) wire plus ground, 120/208 volt service to the fused cut-out. The feeders shall be tapped off the main building service ahead of the main service switch but after the Current Transformers (Metering Transformers).
5. Provide fused cut-outs for fire alarm system and central office connection panel.

P. Central Office Connection Panel
1. Contractor shall provide Central Office Connection Panel from a licensed, FDNY approved, central station monitoring company. Include one (1) year of monitoring services.
2. Contractor shall include all FDNY required monitoring, but not less than the points indicated on the documents for specified fire alarm system.
3. All equipment shall be as approved by FDNY. Start of one (1) year monitoring services shall be from FDNY approval of fire alarm system.

PART 3.00 - EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

A. The Contractor shall receive and store all material and equipment necessary to the completion of the Project.

B. Store fire alarm equipment in a clean, dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.

C. Handle fire alarm equipment carefully to prevent damage, breaking, and scoring. Do not install damage equipment or components; replace with new.

3.02 INSTALLATION

A. The entire system shall be installed in a workmanlike manner, in accordance with approved manufacturer's wiring diagrams. The Contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets, fused cut-outs and similar devices necessary for the complete installation. The installing contractor or fire alarm equipment vendor shall have no less than two (2) NICET Level II fire alarm technicians and a NICET Level III project manager dedicated to this project.

B. Manufacturer's Instructions

1. In addition to the requirements of these Specifications, comply with manufacturer's instructions and recommendations for all phases of the Work.

C. Automatic Fire Alarm System Control Panel (FACP) Software Programming

1. Subsequent to equipment approval and prior to software programming of the FACP, a representative of the equipment manufacturer shall meet with a representative of the Commissioner to establish a schedule of the alarm codes to be assigned to each alarm initiating device. The alarm codes shall be three (3) digit alarm codes indicating the floor of alarm initiation, the area of alarm initiation and the type of alarm initiating device reporting the alarm condition.
2. Subsequent to equipment approval and prior to software programming of the FACP, a representative of the equipment manufacturer shall meet with a representative of the Commissioner to establish a schedule of the custom labels for each addressable device to be displayed on the alphanumeric, liquid crystal display (LCD) of the FACP.
3. The end-user shall retain complete rights and ownership to all software running in the system at all times. The fire alarm equipment vendor shall provide useable hard and soft copies of the software database to the End-User at the time of final system acceptance. The database provided shall be useable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted use and modification of the database. The extend of hardcopy database documentation to be provided shall be defined by the Commissioner prior to final system acceptance.

D. Manual Fire Alarm Stations

1. The Contractor shall furnish and install one (1) manual fire alarm stations, as directed by New York City Fire Department.
2. Manual fire alarm station shall be mounted with operating handle four feet above the finished floor (4'-0" AFF).
3. When manual fire alarm station is to be surface mounted, matching red backbox shall be provided by the equipment manufacturer.

E. Smoke Detectors

1. The Contractor shall furnish and install area smoke detectors at locations where shown on the Drawings or called for in the Specifications.
2. These smoke detectors shall be surface mounted at designated locations.

3. In general, these smoke detectors will be mounted on ceilings. The Contractor shall furnish and install a suitable surface or semi-flush backbox to which the sensor will be mounted.
4. Smoke detectors shall be installed no closer than five feet (5.0') from air registers, or within 12" of any wall.
5. Do not install smoke detector heads until the Work (including cleaning) of all trades in the building has been completed. Protect all installed smoke detector heads from airborne dust and debris, with plastic bags, until the final acceptance test. Any sensor cleaning costs, necessitated by failure to protect the smoke detector heads, shall be the responsibility of the Contractor.
6. Smoke detectors shall be installed in accordance with NFPA-72 as modified by NYC Building Code.

F. Duct Smoke Detectors
1. The Contractor shall furnish the duct smoke detectors.
2. The Contractor shall co-ordinate with the Mechanical Contractor (sheet metal tradesman) for the installation of the duct smoke detector housings.
3. The Mechanical Contractor (sheet metal tradesman) is to provide holes in the ductwork for duct smoke detector sampling and reference tubes, where shown on the HVAC Drawings.
4. The Mechanical Contractor (sheet metal tradesman) is to provide the actual installation of the duct smoke detector housings and sampling and reference tubes on and into the ductwork, where shown on the HVAC Drawings.
5. All sampling and reference tubes shall be cut to fit the interior dimensions of the ductwork being penetrated and in a manner that meets the manufacturer's criterion for an acceptable and working arrangement.
6. The Contractor shall consult the HVAC Drawings for locations of the duct smoke detectors, in order to provide adequate conduit, wiring and connections.
7. Do not install duct some detector heads until the Work (including cleaning) of all trades in the building has been completed and the air handling systems have been run for a minimum of four (4) hours. Protect all installed duct smoke detector heads from duct airborne dust and debris, with plastic bags, until the final acceptance test. Any detector cleaning costs, necessitate by failure to protect the duct smoke detector heads, shall be the responsibility of the Contractor.
8. Install a remote alarm lamp for each duct smoke detector to indicate when sensor is in alarm. Locate as directed in field and provide identification nameplate to identify location of sensor in alarm and HVAC system associated with detector.

G. Central Office Connection Panel
1. Installation shall include all required power and alarm wiring for complete system in accordance with service provider and FDNY requirements.

H. Wiring

1. All wiring shall be:
   a. Of the size and configuration type recommended by the manufacturer for each type of circuit in the system and meet the requirements below listed in b. through h.
   b. Copper conductors only. Aluminum conductors or copper clad, plated or coated aluminum conductors shall not be acceptable.
   c. Color-coded throughout.
   d. In conformance with Section 4000-06 of the Rules of the City of New York.
   e. Approved by the New York City Fire Department and New York City Building Department.
   f. A minimum of No. 12 A.W.G. for power wiring (above 75 volts) and No. 16 A.W.G. for low voltage wiring (75 volts or less), unless otherwise noted.
   g. All low voltage wiring (75 volts and less) shall be Type FPLP, 15 mil insulation, 150°C, colored red, 25 mil overall jacket, cable printing per UL1424, labeled "Classified NYC Cert. Fire Alarm Cable".
   h. All power conductors (above 75 volts) shall be TFFN, TFN, THHN, THWN, or FEP minimum 600 volts, 90°C.
2. All wires shall test free from grounds and crosses between conductors.
3. A ground wire equal in size to the largest conductor used on the system, but not less than No. 10 A.W.G., attached to the fire alarm control panel (FACP) and shall be installed in 3/4" conduit and securely connected to the grounding bus or terminal in each box or cabinet it enters. The ground wire shall be routed with the supply conductors from the fused cutout. Provide a grounding electrode conductor not less than #8 AWG to the fused cutout and install per New York City electric code.
4. Circuit wiring from the FACP to the zoning indicator panel shall be a minimum of as follows:
   a. Data communications circuit wiring: Two (2) cables, each composed of two (2) No. 16 A.W.G., twisted and shielded, copper conductors.
   b. 24 VDC, power circuit wiring: Two (2) No. 14 A.W.G., copper conductors.
5. Circuit wiring from the FACP to the system peripheral equipment shall be a minimum of as follows:
   a. Each multiple addressable peripherals network data communications circuit: Two (2) No. 16 A.W.G., twisted and shielded, copper conductors.
   b. Each duct smoke sensor/Addressable Module 24 VDC power circuit: Two (2) No. 14 A.W.G., copper conductors.
   c. Each one-way voice communication speaker circuit: Two pair of Two (2) No. 12 A.W.G. copper conductors.
6. Circuit wiring from Addressable Modules to the system peripheral equipment shall be a minimum of as follows:
   a. Each alarm initiating, supervisory or status monitoring circuit from an Addressable Monitor Module (AMM): Two (2) No. 16 A.W.G., copper conductors.
   b. Each control circuit from an Addressable Control Module (ACM): Two (2) No. 12 A.W.G., copper conductors.

7. Circuit wiring from the fire alarm control panel (FACP) to the central station transmitter location shall be a minimum of fourteen (14) No. 14 A.W.G., copper conductors.

I. Conduit and Raceways

1. All wiring shall be mechanically protected when installed exposed and in areas with no drop ceiling and when penetrating fire walls and floor slabs. All wiring in mechanical rooms, elevator equipment rooms, loading dock and garages shall be run in conduit. Only rigid heavy wall conduit, properly sized to New York City Electrical Code requirements, shall be used to provide said mechanical protection, and for all system power (over 75 volts) wiring.
2. All penetrations of floor slabs and fire walls shall be fire stopped in accordance with all local fire codes. All cable penetrations shall be sleeved (1" conduit minimum) and fire stopped.
3. Fire alarm system terminal and junction locations shall be identified in accordance with NFPA Standard 70, Section 760-10. Terminal and junction boxes shall be painted red and stenciled in white letters "FIRE ALARM", preventing unintentional interference with the fire alarm system wiring during testing, servicing and additional medications to the system.
4. Electrical conduits shall enter only at the sides or bottom of the fire alarm control panel (FACP).
5. Minimum size conduit shall be ¾".

J. 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.

K. 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, sprinkler status points. Label all addressable modules as to their function.

L. 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).

M. Auxiliary relays shall be appropriately labeled to indicate "FIRE ALARM SYSTEM" and their specific function (i.e. FAN S-1 SHUTDOWN).

N. 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).

O. All 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.

P. All 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 installing contractor to bring it, in writing, to the attention of the Commissioner. Failure to bring such issues to the attention of the Commissioner shall be the exclusive liability of the installing Electrical Contractor.

Q. Provide fire alarm control panel (FACP, system operating instructions, framed under clear Lexan or glass and mounted adjacent to the FACP.

R. Provide a reduced copy (8-1/2" x 11") of the fire alarm system riser diagram, framed under clear Lexan or glass and mounted adjacent to the fire alarm control panel (FACP).

S. The fire alarm control panel (FACP) shall be arranged to receive power from three-wire, 30 Ampere, 120/208 volt, 60 cycle alternating current supply through fused cut-out. All low voltage operation shall be provided from the FACP.

T. Fan shutdown and smoke purge fan control wiring shall be terminated by this contractor in starters or control panels as indicated on approved control wiring diagrams provided by mechanical contractor.

3.03 CLEAN UP

A. Upon completion of the installation, all debris created by the installation shall be removed from the premises or disposed of as directed by the Commissioner.

3.04 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 installing 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 Installing Contract and the Alarm System Vendor shall, upon the request of the Consulting Engineer or End-User, attend any and all project meetings for the purpose of accurately determining progress.

D. It shall be the responsibility of the installing 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 Consulting Engineer, End-User or AHJ, the installing contractor shall be responsible for the cleaning of all smoke detectors prior to final acceptance.

3.05 TESTS

A. The 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 alarm system shall be set forth with the consent of the code enforcement official, the Commissioner and the manufacturer.

SECTION 28 31 11

AUTOMATIC FIRE ALARM SYSTEM

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

B. All exceptions taken to these Specifications, all variances from these Specification and all substitutions of operating capabilities or equipment called for in these Specification shall be listed in writing and forwarded to the Commissioner. Any such exception, variances or substitutions that were not listed and are identified in the submittal, shall be grounds for immediate disapproval without comment.

C. 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 Specifications shall include all labor, equipment, materials, hoisting, rigging and services necessary to furnish and install a complete automatic fire alarm system of the microprocessor based, software programmable, addressable type. It shall be addressable device point annunciated and also provide supervised wiring with all operations as herein described and as shown on Drawings. The system shall consist of, but not be limited to, the following:

1. Automatic fire alarm system control panel (FACP).
2. Remote annunciator panel and Zoning Indicator panel.
3. Addressable manual fire alarm stations. (One required - locate as directed by FDNY).
4. Addressable smoke sensors.
5. Addressable duct smoke sensors.
6. Addressable heat sensors.
7. Addressable Monitoring Modules (AMM's).
8. Non-addressable alarm initiating, supervisory and status monitored devices to be integrated into the fire alarm system via the Addressable Monitoring Module (AMM):
   a. Conventional (non-addressable) high temperature heat detectors (alarm initiating).
   b. Sprinkler waterflow alarm switches (alarm initiating).
   c. Sprinkler and standpipe valve tamper switches (supervisory).
   d. Fire, jockey, and/or booster pump status contacts (supervisory).
9. Devices to be controlled by the FACP relays, duct smoke sensor relays and/or individual Addressable Control Modules (ACM's):
   a. Connections to the central station agency transmitter (provided by this contractor) for alarm, supervisory and system trouble conditions.
   b. Air handling fan systems for shutdown.
   c. Fire/smoke dampers used for each fan system.

10. System battery backup operation of 24 hours standby condition and 15 minutes of alarm load condition.
11. All New York City required system peripherals, placards operating instruction/riser diagram and holders, etc. shall be included in the system price.
12. Fire alarm system and central office connection panel fused cut-outs.
13. Central Office Connection Panel including one (1) year of monitoring service.
14. As-built plans for the Fire Alarm System shall be prepared by this contractor and submitted to Commissioner.
15. Provide all documentation required for final FDNY approval, including:
    a. As-built plans. Submission shall include three (3) hard copy sets of floor plans with Fire Alarm Riser diagram acceptable to FDNY. Submission shall also include one set as-built CAD files on CD-Rom. Files shall be in a format readable by AutoCad 2007. As-built submission shall be made to Commissioner a minimum of fifteen (15) working days prior to initial FDNY field inspection. Engineer will verify as-builts and return to contractor a signed and stamped copy of the riser diagram for his use in obtaining final FDNY approval. Drawings found to not represent as-built conditions will be marked up and returned to contractor for correction, or held until field installation is verified by Engineer to match as-built drawings. Contractor shall be responsible for all delays and associated costs, including re-scheduling FDNY inspection caused by his failure to properly prepare or submit to Commissioner in a timely manner, as-built drawings of the Fire Alarm System.
    b. Final Input/Output Matrix prepared per Appendix A A10.6.2.3.(9) of NFPA 72. Matrix shall be included on As-Built Riser diagram drawing submission.
    c. Written statement of either licensed electrician or licensed Fire Alarm Installation Company certifying that a functional test has been conducted of the Fire Alarm System and that the system is operating as designed and in accordance with the Final Input/Output Matrix.
    d. Application for FDNY Inspection.
16. Removal of Existing Fire Alarm System: This shall include all existing fire alarm wiring and cables.
17. Provide Fire Watch per New York City Fire Department requirements for all spaces during times when existing fire alarm system is not in service and new fire alarm system has not received FDNY approval.

B. The fire alarm system shall have sufficient capacity to incorporate all equipment and perform all functions as stipulated within these Specifications and the Drawings of this project.

C. Drawings show the fire alarm system systematically. No added compensation shall be permitted for variations due to field conditions or the specific installation requirements of manufacturers.

1.03 APPLICABLE LISTINGS, CODES AND STANDARDS

A. Except as modified by governing codes and by the Contract Drawings, comply with the applicable provisions and recommendations of the following:

B. All equipment shall be UL listed for its intended use and conform to the latest UL Standards.

C. 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.
UL 521	Heat Detectors for Fire Protective Signaling Systems.
UL 464	Audible Signaling Appliances.
UL 1638	Visual Signaling Appliances.
UL 38	Manually Activated Signaling Boxes.
UL 346	Waterflow Indicators for Fire Protective Signaling Systems.
UL 1971	Standard for Signaling Devices for the Hearing Impaired
UL 1481	Power Supplies for Fire Protective Signaling Systems.
UL 1711	Amplifiers for Fire Protective Signaling Systems.

D. This installation shall comply with:

1. Americans with Disabilities Act (ADA).
2. National Electric Code, Article 760 with NYC Amendments.
3. National Fire Protection Association Standards: NFPA72-2002 with New York City Amendments.
4. International Standards Organization (ISO): ISO-9001.
5. Local Law 33 of 2007 (Chapter 9, Chapter 30, Mechanical Code, Appendix K & Q and other sections as they apply.)
6. Utilize listed and labeled Fire Alarm Equipment complying with the acceptance requirements of New York City Department of Buildings, Office of Technical Certification and Research.
7. The requirements of the City of New York Building Department and the City of New York Fire Department.
8. All wiring requirements shall meet the requirements of the Rules of the City of New York Section 4000-06.
9. The fire alarm system and its installation shall comply with all other local codes and authorities having jurisdiction.
10. This installation shall be filed in accordance with NYC FDNY "Fire Alarm Plan Submission" procedures per FDNY Technology Management Bulletin 10/2009.

1.04 RELATED DOCUMENTS

A. Prior to the commencement of work, the Contractor shall obtain all permits necessary for installation of the work. All permit costs and inspections fees shall be included as part of the required work.

B. Local requirements shall be adhered to with regard to submitting specifications, wiring diagrams, shop drawings and plans. Responsibility for furnishing the quantities of copies on cloth and/or paper, as directed by such requirements, shall be included as part of the Work of this Section.

C. Prior to commencement and after completion of work, the Contractor shall notify all authorities having jurisdiction.

D. The Contractor shall submit a letter of approval of the installation, from the local code authority, before requesting final acceptance of the system.

1.05 RELATED WORK

A. Supplemental General Requirements of Electrical Work as specified in Section 260519.

B. Basic materials and methods as specified in Section 260519.

C. 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. Duct smoke sensors to be installed by the Mechanical Contractor. See Division 23. They shall be furnished by and wired and connected to the fire alarm system by the Contractor.
2. Sprinkler waterflow alarm switches and valve tamper switches to be provided and installed by the Fire Protection/Sprinkler Contractor. See Division 21. They shall be wired and connected to the fire alarm system by the Contractor.
3. Fire, booster and/or jockey pump status contacts to be provided by the pump control equipment. See Division 23. They shall be wired and connected to the fire alarm system by the Contractor.
4. Coordinate with all other trade Contractors for interface with any and all other fire alarm system related devices.
5. New air handling fan control circuit termination points shall be identified by the Mechanical Contractor on his control wiring diagrams for use by this contractor.
6. New air handling fan and damper status monitoring sail switches and end switches shall be furnished by the Mechanical Contractor and wired and connected to the fire alarm system by this contractor.

1.06 QUALITY ASSURANCE

A. It is the intent of these Specifications to provide a complete fire alarm system that complies in all respects with the requirements of all applicable codes and standards. Equipment, material, installation practices, etc. that do not meet these requirements or do not meet the performance standards herein specified shall not be acceptable.

B. All fire alarm system equipment furnished under this Specification shall be UL listed, under the appropriate category, as the product of a single manufacturer. All control equipment shall be listed under UL Category UOJZ as a single control unit. The manufacturer shall have been engaged in the production of this type of equipment for at least three (3) years and have a fully equipped services organization within fifty (50) miles of the installation.

C. The equipment furnished under this Specification shall be equal in every way to that manufactured by EST whose catalog and model numbers are used to indicate the type and quality of design and materials as well as the operating features required. Only equipment manufactured by Edwards, Simplex and Notifier will be considered for substitution.

D. Equipment substitutions must meet or exceed all performance requirements. Only equipment manufactured by Edwards, Simplex and Notifier will be considered for substitution.

E. Acceptance of substitutions, based on submittal documents furnished by the Contractor, shall only be construed as permission to proceed with the installation pending final test and approval of the system. The Contractor shall continue to bear the liability for replacement of substituted equipment if, in the opinion of the Commissioner or Engineer, the substitute equipment fails to perform as specified or fails to meet approval of all authorities having jurisdiction within three (3) months after scheduled Project completion.

F. Numbers and types of fire alarm system devices or circuits shall be as shown on the Drawings and as herein described in this Section. Should any conflicts arise between and Drawings and/or this Section, regarding the quantities of devices or circuits, the higher quantity shall be considered as correct.

G. It is the Contractor's responsibility to submit acceptable equipment for review by the Engineer. The Contractor shall bear all liability for damages arising from his failure to submit equipment that meets these Specifications, including, but not limited to, penalties for failure to meet construction deadlines.

1.07 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 printed product data, catalog cuts and description of any special installation procedures. Poorly photocopied and/or illegible product data sheets shall not be acceptable and shall be rejected. 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. Shall include a specific, proposed point descriptor above each addressable device. Shall include a specific, discrete point address that 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) shall depict internal component placement and all internal and field termination points. Drawing shall provide a detail indicating where conduit penetrations shall be made, so as to avoid conflicts with internally mounted batteries. 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 alarm system. Upon contractors request, in accordance with Section 260500, Par. 1.17 requirements and execution of release form, CAD Files (AutoCAD) shall be provided by the consulting engineer for the use of the alarm system equipment vendor in the preparation of the Device Layout Plans. Device Layout 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 that corresponds with that indicated on the Riser Diagram. All notification appliances shall also be provided with a circuit address that 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.
7. Proposed system Input/Output Matrix prepared as set forth in Appendix A. Figure A.10.6.2.3.(a) of NFPA 72.
8. Contained in the title block of each drawing shall be symbol legends with device counts, wire tag legends, circuit schedules for all addressable and notification appliance circuits, the project name/address, and a drawing description which corresponds to that indicated in the drawing index on the coversheet drawing. A section of each drawing title block shall be reserved for revision numbers and notes. The initial submission shall be Revision 0, with Revision A, B, or C as project modifications require.

I. Battery calculations shall be provided on a per power supply/charger basis based on the current NYC Code, including New York City Building Code Appendix Q Section 106 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 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.

J. Provide voltage drop calculations to substantiate wire sizes.

K. Table of contents, product data sheets, sequences of operation, battery calculations, voltage drop calculations, installation instructions, licenses, NICET certifications and B-Size (blackline) reduced shop drawings shall be provided by the alarm vendor as part of a single, spiral bound submittal book. The submittal book shall have laminated covers indicating the project address, SED number, system type, and contractor. The book shall consist of labeled dividers, and shall not exceed 9 ½" in width, and 11 ½" in height. No less than three (3) sets of submittal booklets shall be provided to the consulting engineer for review and comment. Additional copies may be required at no additional cost to the project.

L. Scale drawing sets shall be submitted along with the submittal booklets. These drawings may be either D-Size or E-Size Blueline drawings and of a sufficient resolution to be completely read. Sets shall be bound and folded so as to not take up more than 100 square inches of space. No less than three (3) sets of scale drawing sets shall be provided to the consulting engineer for review and comment. Additional copies may be required at no additional cost to the project.

M. System Manual:

1. Upon final approval of all submittal documentation and shop drawings, the Contractor shall compile and assemble, with the equipment manufacturer's assistance, a complete system manual consisting of: site specific operating and maintenance instructions, manufacturer's catalog pages of all equipment and components, all as-built wiring and conduit diagrams (both floor plan and riser types) and a manufacturer's suggested spare parts list. The Contractor shall provide one (1) copy to the Engineer for approval.
2. Upon Engineer approval of the system manual, the Contractor shall provide and turn over to the Commissioner's representative three (3) copies of the approved system manual.

PART 2.00 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. The catalog numbers used are those of Edwards Systems Technology (EST) by GE Security "or approved equal", and constitute the type and quality of equipment to be furnished.

B. If equipment of another manufacturer is to be submitted for approval as equal, the contractor shall list all exceptions taken to these Specifications, all variances from these Specifications and all substitutions of operating capabilities or equipment called for in these Specifications and forward said list to the Engineer. Any such exceptions, variances or substitutions that were not listed are identified in the submittal, shall be grounds for immediate disapproval without comment. Final determination of compliance with these Specifications shall rest with the Engineer, who, at his discretion, may require proof of performance.

C. Alternate product submissions based upon use of a product line considered proprietary in its distribution, design, application software, or ongoing maintenance and repair shall not acceptable. Proof of a product's non-proprietary nature shall be the burden of the contractor, and shall be in the form of written documentation. The determination of a product's compliance to this requirement shall be exclusively that of the Consulting Engineer.

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.

E. The Sprinkler / Smoke Detection System supplied under this specification shall be microprocessor-based. All Control Panel Assemblies and connected Field Appliances shall be both designed and manufactured by the same company, and shall be tested and cross-listed as compatible to ensure that a fully functioning Life Safety System is designed and installed.

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. Addressable Monitor Modules (AMM's) shall be provided to connect to and provide individually addressed alarm initiating, supervisory or status monitoring circuits for non-addressable devices such as sprinkler waterflow alarm switches, sprinkler valve tamper switches, etc. Each Addressable Monitor Module (AMM) shall provide one (1) NFPA Standard 72, Style B, two-wire (Class B), supervised circuit. Assignment of individual AMM for alarm, supervisory or status monitor operation shall be accomplished during the programming of the FACP central processing unit (CPU) software. Each of the following types of non-addressable devices shall be provided with an individual AMM for alarm initiating, supervisory or status monitoring, typically as follows:

1. Boiler Room heat detectors: Provide one (1) alarm initiating AMM for the Boiler Room heat detectors.
2. Sprinkler waterflow alarm switches: Provide one (1) alarm initiating AMM for each sprinkler waterflow alarm switch.
3. Sprinkler valve tamper switches: Provide one (1) supervisory AMM for each sprinkler valve tamper switch.
4. Fire Pump/Booster Pump: Provide *four (4) status monitoring AMM's for each fire/booster pump. (Pump running, phase failure, phase reversal and controller connected to emergency service).

D. FACP relays shall be provided to connect to and provide fire alarm system controls of associated equipment such as central station transmitter connections. Each relay shall provide at least one (1) single-pole, double-throw (SPDT) contact. Assignment of individual relays for control operation shall be accomplished during the programming of the FACP central processing unit (CPU) software. Each of the following types of equipment shall be provided with a control relay contact, typically as follows:

1. Central station agency connections: Provide seven (7) contacts (system manual alarm system waterflow alarm, system smoke/heat alarm, [pump running, fire pump power failure], system supervisory off-normal condition and system trouble condition) for connection to the central station agency transmitter.

E. Duct smoke sensor addressable relays and Addressable Control Modules (ACM) shall be provided to connect to and provide fire alarm system control of remote equipment such as air handling systems, elevator controls, etc. Each relay shall be individually addressable and provide double-pole, double-throw (DPDT) contacts, fused, (0.6 A.) @ 120 VAC or 30 VDC (Non-inductive). Assignment of individual relays for control operation shall be accomplished during the programming of the FACP central processing unit (CPU) software. Provide auxiliary load relay controlled by addressable relay. Auxiliary load relay contacts shall be rated for 20A @ 120 volts, when interrupting circuits protected by 15 Ampere or 20 Ampere, 120 volt circuit breakers.

Auxiliary load relay contacts may be rated 10 Amperes when interrupting fused control circuits where fuse does not exceed 10 Amperes at 120 volts.

Each of the following types of remote equipment shall be provided with an addressable control module and auxiliary relay as follows:

1. Air handling fan systems: Provide one (1) shutdown addressable control module with auxiliary relay for each supply and for each return air handling fan 2000 CFM or larger. Auxiliary relay contact shall be programmed normally closed, open on alarm.

F. The FACP shall provide each of the following types of equipment and circuits associated with the fire alarm system with a manual control switch, as required by the functional requirements of these Specifications, which shall be typically as follows:

1. Central station alarm disconnect: Provide one (1) switch for central station alarm disconnect.
2. Air handling fan systems restart: Provide one (1) start switch to allow air handling system to be restarted after the fire alarm system has been reset to normal.

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.

H. Each control panel shall have a dedicated 20Amp-120VAC feed. An appropriate fuse cut out shall be included, wired as indicated in the Building Code for the City of NY.

2.03 FIRE ALARM SEQUENCE OF OPERATIONS

A. Operation of any manual fire alarm station or alarm activation of any smoke sensor, duct smoke sensor, heat sensor/detector, switch, fire suppression system alarm contact or other alarm initiating device shall automatically:

1. Sound a pulsing audible signal and flash the general alarm LED indicator at the fire alarm control panel (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.
2. Display a general alarm indication and system status summary (numbers of present alarm, supervisory and/or trouble conditions) on the FACP alphanumeric, liquid crystal display (LCD). Pressing the alarm acknowledge key shall display, for thirty (30) seconds, the individual device/circuit display, to include the "alarm" status, "device type" indication and custom label (up to forty characters and spaces), for the device reporting the alarm condition. At the end of the thirty (30) second period, the general alarm indication and system status summary shall again be displayed. The individual device display may be recalled at any time by repressing the alarm acknowledge key or until the alarm condition is reset to normal.
3. Enter the custom label for the device reporting the alarm condition with the time and date of alarm activation into the FACP historical alarm log for future recall/review.
4. Sound an audible signal at the remote Zoning Indicator panel. The audible signal may be silenced during the alarm condition.
5. At the remote Zoning Indicator panel visually indicate zone and type of alarm (smoke detection, sprinkler water flow, manual fire alarm pull station, or other automatic detection device or fire suppression system). Zone shall not exceed 22,500 square feet in area or 300 linear feet in any direction. Visual indication shall not be cancelled by operation of the audible alarm silence switch.
6. Operate control relay contacts to shutdown all air handling systems that serve the building. Air handling systems shall not be permitted to restart to normal operation from the simple operation of the system reset switch. Two separate manual reset operations shall be required after fire alarm system has been reset to normal. A separate air handling system restart switch shall be provided on the FACP, which shall enable the manual local reset of each individual system.
7. Operate control relay contact to initiate the transmission of an alarm indication to the central station agency transmitter.

B. Alarm activation of any sprinkler waterflow alarm switch shall automatically:

1. Provide those operations as listed in 2.03 A, 1 through 7.

C. Alarm activation of an elevator machine room smoke detector shall automatically:

1. Provide those operations as listed in above 2.03 A, 1 through 7.

D. Alarm activation of any sprinkler waterflow alarm switch shall automatically:
   1. Provide those operating as listed in 2.03 B1.

E. System Supervisory Operation
   1. The following equipment or devices associated with the fire alarm system shall be supervised for normal and off-normal conditions:
      a. Sprinkler and standpipe valve tamper switches.
      b. Fire, jockey and/or booster pump "Running", and "Power/Phase Failure" contact.
   2. Activation of any of the above listed supervisory devices, contracts or switches to an off-normal condition shall automatically:
      a. Sound an audible signal and flash the supervisory service LED indicator at the fire alarm control panel (FACP). Pressing the supervisory acknowledge key on the FACP shall silence the audible signals and continuously light the LED indicator, during the off-normal condition. Subsequent off-normal conditions shall resound the audible signals and again flash the LED. Each off-normal condition must be individually acknowledged.
      b. Display a general supervisory indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the FACP alphanumeric, liquid crystal display (LCD). Pressing the supervisory acknowledge key shall display, for thirty (30) seconds, the individual device/circuit display, to include the "off-normal" status, "device type" indication and custom label (up to forty characters and spaces, for the device reporting the off-normal condition. At the end of the thirty (30) second period, the system status summary shall again be displayed. The individual device display may be recalled at any time by repressing the supervisory acknowledge key or until the off-normal condition is restored to normal.
      c. Enter the custom label for the device reporting the off-normal condition with the time and date of off-normal activation into the FACP historical trouble log for future recall/review.
      d. Sound an audible signal at the remote zoning indicator panel. The audible signal may be silenced during the off-normal condition.

e. Display a general trouble indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the remote zoning indicator panel alphanumeric, liquid crystal display (LCD). Pressing the supervisory acknowledge key shall display, for thirty (30) seconds, the individual device display, to include the "off-normal" status, "device type" indication and custom label (up to forty characters and spaces, for the device reporting the off-normal condition. At the end of the thirty (30) second period, the system status summary shall again be displayed. The individual device display must be recalled at any time by repressing the supervisory acknowledge key or until the off-normal condition is restored to normal.

f. Operate a control relay contact to initiate the transmission of a supervisory indication to the central station agency transmitter.

F. System Supervision For Trouble Conditions

1. The fire alarm system wiring (except control wiring to fans, etc.) shall be electrically supervised to automatically detect and report trouble conditions to the fire alarm control panel (FACP).

2. Any opens or grounds on Addressable Monitor Module (AMM) alarm initiating, supervisory or status monitoring circuit wiring and any opens, grounds or shorts across addressable data communications, remote annunciator panel data communications and/or alarm indicating appliance (signal) circuit wiring shall initiate a system trouble condition.

3. System addressable devices shall be supervised for placement and normal operation. Removal of an addressable device or the failure of its internal electronic circuitry shall initiate a system trouble condition.

4. Operation of the central station agency alarm disconnect switch or any manual control commands that alter the system from its normal programmed standby configuration shall initiate a trouble condition.

5. The following FACP states shall initiate a system trouble condition:
   a. Primary 120 VAC power loss.
   b. Battery disconnect.
   c. Battery low voltage.

6. Trouble conditions shall automatically:
   a. Sound an audible signal and flash the general system trouble LED indicator at the fire alarm control panel (FACP). The system trouble bell shall also ring. Pressing the trouble acknowledge key on the FACP shall silence the audible signals and continuously light the LED indicator, during the trouble condition. Subsequent trouble conditions shall resound the audible signals and again flash the LED. Each trouble condition must be individually acknowledged. The audible trouble signals shall also resound at programmable time intervals to remind the system operator that the trouble condition(s) still exists.

b. Display a general trouble indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the FACP alphanumeric, liquid crystal display (LCD). Pressing the FACP trouble acknowledge key shall display, for thirty (30) seconds, the individual device or circuit display, to include the "trouble" status, "device/circuit type" indication and custom label (up to forty characters and spaces, for the device or circuit reporting the trouble condition. At the end of the thirty (30) second period, the general trouble indication and system status summary shall again be displayed. The individual device/circuit display may be recalled at any time by repressing the trouble acknowledge key or until the trouble condition is repaired.

c. Enter the circuit/device custom label with time and date of trouble condition occurrence into the FACP historical trouble log for future recall/review.

d. Sound an audible signal at the remote annunciator panel. The audible signal may be silenced during the trouble condition.

e. Display a general trouble indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the remote annunciator panel's alphanumeric, liquid crystal display (LCD). Pressing the trouble acknowledge key shall display, for thirty (30) seconds, the individual device or circuit display, to include the "trouble" status, "device/circuit type" indication and custom label (up to forty characters and spaces, for the device or circuit reporting the trouble condition. At the end of the thirty (30) second period, the general trouble indication and system status summary shall again be displayed. The individual device/circuit display may be recalled at any time by repressing the trouble acknowledge key or until the trouble condition is repaired.

f. Operate a control relay contact to initiate the transmission of a trouble indication to the central station agency transmitter.

G. Air Handling Systems Control

1. Air handling systems shall be automatically controlled from the fire alarm system control relays, as previously described.

2. In addition, the following air handling system related functions shall be provided:

a. Air handling systems shall not be permitted to restart to normal operation from the simple operation of the system reset switch. A separate manual reset operation shall be required after fire alarm system has been reset to normal. A separate air handling system reset switch shall be provided on the FACP which shall enable the restart of the fan systems.

2.04 SUPPORT FOR INSTALLER AND COMMISSIONER MAINTENANCE

A. Provide a coded one-man walk test feature. Allow audible or silent testing. Signal alarms and troubles during test. Allow receipt of alarms and programmed operations for alarms from areas not under test.

B. Provide internal system diagnostics and maintenance user interface controls to display/report the power, communication, and general status of specific panel components, detectors, and modules.

C. Provide loop controller diagnostics to identify common alarm, trouble, ground fault, Class A fault, and map faults. Map faults include wire changes, device type changes by location, device additions/deletions and conventional open, short, and ground conditions. Ground faults on the circuit wiring of remote module shall be identified by device address.

D. Allow the user to display/report the condition of addressable analog detectors. Include device address, device type, percent obscuration, and maintenance indicator. The maintenance indicator shall provide the user with a measure of contamination of a device upon which cleaning decisions can confidently be made.

E. Allow the user to report history for alarm, supervisory, monitor, trouble, smoke verification, watchdog, and restore activity. Include Facility Name, Licensee, Project Program Compilation date, Compiler Version, Project Revision Number, and the time and date of the History Report.

F. Allow the user to disable/enable devices, zones, actions, timers and sequences. Protect the disable function with a password.

G. Allow the user to activate/restore outputs, actions, sequences, and simulate detector smoke levels.

H. Allow the service user to enter time and date, reconfigure an external port for download programming, initiate auto programming and change passwords. Protect these functions with a password.

I. THE END-USER SHALL RETAIN COMPLETE RIGHTS AND OWNERSHIP TO ALL SOFTWARE RUNNING IN THE SYSTEM. The alarm equipment vendor shall provide useable hard and soft copies of the software database to the End-User at the end of the warranty period. The database provided shall be useable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted use and modification of the database. The Consulting Engineer shall define the extent of hardcopy database documentation to be provided.

2.05 UL LISTED AND APPROVED EQUIPMENT

A. Control Panel Requirements:
The control panel or panels and all system devices (pull stations, smoke and heat detectors, etc. shall be Edwards Systems Technology (EST) by GE Security type EST3 series, Simplex, Notifier, or approved equal). The Fire Alarm vendor may substitute the GE security EST2 panel for systems under 200 fire alarm devices. All under one label "UL listed and approved" for the use of fire alarm systems in this area of the United States of America. The operating controls shall be located behind locked door with viewing window. All control modules shall be labeled, and all zone locations shall be identified.

B. System Controllers
The main controller 3-CPU shall be supervised, site programmable, and of modular design supporting up to 125 detectors and 125 remote modules per addressable Signaling line Circuit (SLC). The CPU shall support up to 10 SLC's per panel for a total system capacity of 2500 Intelligent Addressable points. The system shall be designed with peer-to-peer networking capability for enhanced survivability, with support for up to 64 modes, each with up to 2500 points and an overall capacity of 160,000 points. The cabinets shall be steel, with a red finish.

C. The system shall store all basic system functionality and job specific data in non-volatile memory. All site specific and operating data shall survive a complete power failure intact. Passwords shall protect any changes to system operations.

D. The Main Controller Module shall control and monitor all local or remote peripherals. It shall support a large 960 character LCD, power supply, remote LCD and zone display annunciators, printers, and support communication interface standard protocol (CSI) devices such as color computer annunciators and color graphic displays. Remote LCD annunciators shall also display each and every point in the system and be sized with the same number of characters as in the main FACP display.

E. The panel shall have an interface module for remote site monitoring. The module shall have a dialer (alarm communicator transmitter (DACT)) module to transmit alarm, supervisory and trouble signals to a Central Monitoring Station (CMS). The DACT shall support dual telephones lines, Contact I.D. communications, and configured for dual tone multi-frequency (DTMF) or pulse modes. It shall be possible to delay AC power failure reports, auto test call, and be site programmable. The dialer shall be capable of transmitting every individual alarm condition to the central station.

F. The system shall have built-in automatic system programming to automatically address and map all system devices attached to the main controller. A minimum default single stage alarm system operation shall be supported with alarm silence, event silence, drill, lamp test, and reset common controls.

G. Advanced Windows-based System Definition Utility with Program Version Reporting to document any and all changes made during system start-up or system commissioning shall be used to maintain site specific programming. Time and Date Stamps of all modifications made to the program must be included to allow full retention of all previous program version data. It shall support programming of any input point to any output point. The system shall support the use of Bar Code readers to assist custom programming functions. It shall allow authorized customization of fundamental system operations using initiating events to start actions, timers, sequences and logical algorithms. The system program shall meet the requirements of this project, current codes and standards, and satisfy the local Authority Having Jurisdiction.

H. The system shall support distributed processor intelligent detectors with the following operational attributes; integral multiple differential sensors, automatic device mapping, electronic addressing, environmental compensation, pre-alarm, dirty detector identification, automatic day/night sensitivity adjustment, normal/alarm LEDs, relay bases, sounder bases and isolator bases.

I. The system shall use full digital communications to supervise all addressable loop devices for placement, *correct location*, and operation. It shall allow swapping of "same type" devices without the need of addressing and impose the "location" parameters on replacement device. It shall initiate and maintain a trouble if a device is added to a loop and clear the trouble when the new device is mapped and defined into the system.

J. Each controller shall contain a RS232 printer/programming port for programming locally via an IBM PC. When operational, each controller shall support a printer through the RS232 port and be capable of message routing.

K. System circuits shall be configured as follows: Addressable analog SLC loops Class B (Style 4); Initiating Device Circuits Class B; Notification Appliance Circuits Class B; Network Communications Class B; Annunciator Communications Class B.

L. Single stage operation shall be provided.

M. The system shall have a UL Listed Detector Sensitivity test feature, which will be a function of the smoke detectors and performed automatically every 4 hours.

N. The system shall support 100% of all remote devices in alarm and provide support for a 100% compliment of detector isolator bases.

O. All panel modules shall be supervised for placement and return trouble if damaged or removed.

P. The system shall have a CPU watchdog circuit to initiate trouble should the CPU fail.

Q. The Fire Alarm / Life Safety System shall incorporate the ability to code Notification Appliance circuits per the NYC building code.

R. Audible notification appliances shall be affected by signal silence features. Visual signal appliance shall not be affected by signal silence features.

S. User Interface

The 3-LCDXL Display Module shall be of membrane style construction with a 24 line by 40-character (960 total characters) Liquid Crystal Display (LCD). The LCD shall use super-twist technology and backlighting for high contrast visual clarity and a colored gray/black and white display. In the normal mode the LCD shall display the time, a customer facility name, and the number of history events. In the alarm mode the LCD display the total number of events and the type of event on display. The LCD shall reserve 42 characters of display space for each user custom message by addressable device. The module shall have visual indicators for the following common control functions; Power, Alarm, Supervisory, Monitor, Trouble, Disable, Ground Fault, CPU fail, and Test. There shall be common control keys and visual indicators for reset, alarm silence, panel silence, and drill. Provide four pairs of display control keys for selection of event display by type (alarm, supervisory, monitor and trouble) and forward / backward scrolling through event listings. The operation of these keys shall be integrated with the related common control indicators to flash the indicators when undisplayed events are available for display and turn on steady when all events have been displayed. The LCD shall display the first event of the highest priority as well as the previous seven (7) alarm events "hands free" in chronological order so that the arriving firefighter may track the fires progression. Provide system function keys; status, reports, enable, disable, activate, restore, program, and test. The module shall have a numeric keypad, zero through nine with delete and enter keys.

As an alternate if the above cannot be provided, provive UL-Listed 864 PC graphics display.

T. Power Supplies

The power supply shall be a high efficiency switch mode type with line monitoring to automatically switch to batteries for power failure or brown out conditions. The automatic battery charger shall have low battery discharge protection. The power supply shall provide internal power and 24 Vdc at 7.0A continuous for notification appliance circuits. The power supply shall be capable of providing 7A to output circuits for a maximum period of 100 ms. All outputs shall be power limited. The battery shall be sized to support the system for 24 hours of supervisory and trouble signal current plus general alarm for 5 minutes.

U. Auxiliary power supplies shall be a high efficiency switch mode type with line monitoring to automatically switch to batteries for power failure or brown out conditions. The automatic battery charger shall have low battery discharge protection. The power supply shall provide internal power and 24 Vdc at 7.0A continuous for notification appliance circuits. The power supply shall be capable of providing 7A to output circuits for a maximum period of 100 ms. All outputs shall be power limited. The battery shall be sized to support the system for 24 hours of supervisory and trouble signal current plus general alarm for 5 minutes.

V. Network alphanumeric annunciators shall be located throughout the facility as indicated on the plans. The system shall have the capacity to support 64 network annunciators or EST3 network panel nodes. Each annunciator shall contain a supervised, back lit, liquid crystal with a minimum of 8 line with 21 characters per line. Where required, the annunciator shall include additional zonal annunciation and manual control without additional enclosures. The annunciator shall support full ability to serve as the operating interface to the system and shall include the following features; Matched appearance with other system displays Each LCD Display on each node (cabinet) in the system shall be configurable to show the status of any or all of the following functions anywhere in the system:
Alarm
Supervisory
Trouble
Monitor

W. Each zoning indicator panel must be capable of supporting custom messages as well as system event annunciation. It must be possible to filter unwanted annunciation of trouble, alarm or supervisory functions on a by point or by geographic area. The annunciators shall be mounted in stand-alone enclosures or integrated into the network panels as indicated on the plans.

X. Provide provision in the control panel for future recall of elevator upon alarm from elevator machine room smoke detector, elevator shaft smoke detector or elevator lobby smoke detector.

2.06 COMPONENTS

A. Intelligent Devices—General

Each remote device shall have a microprocessor with non-volatile memory to support its functionality and 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.

Each detector microprocessor shall contain an environmental compensation algorithm that identifies and sets ambient "Environmental Thresholds" approximately six times an hour. The microprocessor shall continually monitor the environmental impact of temperature, humidity, other contaminates 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 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. Fixed Temperature/Rate of Rise Heat Detector, SIGA-HRS

Provide intelligent combination fixed temperature/rate-of-rise heat detectors SIGA-HRS. The heat detector shall have a low mass thermistor heat sensor and operate at a fixed temperature and at a temperature rate-of-rise. It shall continually monitor the temperature of the air in its surroundings to minimize thermal lag to the time required to process an alarm. The integral microprocessor shall determine if an alarm condition exists and initiate an alarm based on the analysis of the data. Systems using central intelligence for alarm decisions shall not be acceptable. The intelligent heat detector shall have a nominal fixed temperature alarm point rating of 135°F (57°C) and a rate-of-rise alarm point of 15°F (9°C) per minute. The heat detector shall be rated for ceiling installation at a minimum of 70 ft (21.3m) centers and be suitable for wall mount applications.

D. Photoelectric Smoke Detector, SIGA-PS

Provide intelligent photoelectric smoke detectors SIGA-PS. 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:

1. Temperature: 32°F to 120°F (0°C to 49°C)
2. Humidity: 0-93% RH, non-condensing
3. Elevation: no limit

E. Standard Detector Mounting Bases, SIGA-SB / SIGA-SB4
Provide standard detector mounting bases SIGA-SB 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:

1. Removal of the respective detector shall not affect communications with other detectors.
2. 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.
3. 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.

F. Duct Detector, Model SIGA-SD: Provide model SIGA-SD 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 amperage contact relays as 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 remote test station model SD-TRK for each duct type smoke detector.

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:

1. Temperature: 32°F to 120°F (0°C to 49°C).
2. Humidity: 0-93% RH, non-condensing.

H. Single Input Module, SIGA-CT1

Provide intelligent single input modules SIGA-CT1. The Single Input Module shall provide one (1) supervised Class B input circuit 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 single input module shall support the following circuit types:

1. Normally-Open Alarm Latching (Manual Stations, Heat Detectors, etc.)
2. Normally-Open Alarm Delayed Latching (Waterflow Switches)
3. Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)
4. Normally-Open Active Latching (Supervisory, Tamper Switches)

I. Dual Input Module, SIGA-CT2

Provide intelligent dual input modules SIGA-CT2. 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:

1. Normally-Open Alarm Latching (Manual Stations, Heat Detectors, etc.)
2. Normally-Open Alarm Delayed Latching (Waterflow Switches)
3. Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)
4. Normally-Open Active Latching (Supervisory, Tamper Switches)

J. Waterflow/Tamper Module, SIGA-WTM

Provide intelligent waterflow/tamper modules SIGA-WTM. 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 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers.

K. Single Input Signal Module, SIGA-CC1

Provide intelligent single input signal modules SIGA-CC1. The Single Input (Single Riser Select) Signal Module shall provide one (1) supervised Class B output circuit capable of a minimum of 2 personalities, each with a distinct operation. When selected as a telephone power selector, the module shall be capable of generating its own "ring tone". The module shall be suitable for mounting on North American 2 ½" (64mm) deep 2-gang boxes and 1 ½" (38mm) deep 4" square boxes with 2-gang covers, or European 100mm square boxes. The single input signal module shall support the following operations:

1. Audible/Visible Signal Power Selector (Polarized 24 Vdc @ 2A, 25Vrms @50w or 70 Vrms @ 35 Watts of Audio)
2. Telephone Power Selector with Ring Tone (Fire Fighter's Telephone)

L. Control Relay Module, SIGA-CR
Provide intelligent control relay modules SIGA-CR. 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 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers.

M. Intelligent Manual Pull Station - (One (1) required)
It shall be possible to address each Signature Series fire alarm pull station without the use of DIP or rotary switches. Devices using DIP switches for addressing shall not be acceptable. The manual stations shall have a minimum of 2 diagnostic LEDs mounted on their integral, factory assembled single or two stage input module. A green LED shall flash to confirm communication with the loop controller. A red LED shall flash to display alarm status. The station shall be capable of storing up to 24 diagnostic codes which can be retrieved for troubleshooting assistance. Input circuit wiring shall be supervised for open and ground faults. The fire alarm pull station shall be suitable for operation in the following environment:

1. Temperature: 32°F to 120°F (0°C to 49°C)
2. Humidity: 0-93% RH, non-condensing

The manual station shall be painted with a one inch wide (1" W.) white stripe running diagonally from the upper left corner to the lower right corner.
Manual Pull Station, SIGA-270
Provide intelligent single action, single stage fire alarm stations SIGA-270. The fire alarm station shall be of metal construction with an internal toggle switch. Provide a locked test feature. Finish the station in red with silver "PULL IN CASE OF FIRE" English lettering. The manual station 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. All manual stations which, when activated dial the central station, shall be mechanically identified with a white stripe per NYC code.

N. Remote Relays
Multi-Voltage Control Relays, MR-100 Series
Provide remote control relays connected to supervised ancillary circuits for control of fans, dampers, door releases, 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.

O. Multi-Voltage Control Relays, MR-200 Series
Provide remote control relays connected to supervised ancillary circuits for control of fans, dampers, door releases, 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.

P. Operating Instruction/Riser Diagram Holders
Shall be red painted, steel, frame holder with clear, Acrylic window with nine inch by twelve inch (9" x 12") dimensions. One (1) holder shall be provided for the fire alarm control panel (FACP)/system operating instructions and one (1) holder shall be provided for a reduced copy (8-1/2" x 11") of the fire alarm system riser diagram. The operating instruction and riser diagram holders shall be mounted adjacent to the fire alarm control panel (FACP).

Q. Fire Alarm System Fused Cut-out

1. The Contractor shall provide an individual cartridge fuse cut-out panel with three (3) poles and a removable, solid copper, neutral bar in fuse gap.
2. Fused cut-out shall be provided with silver sand fuses, current limiting type with an interrupting capacity rating of 200,000 amps (r.m.s. symmetrical). The size of the fuses shall not be less than thirty Amperes (30.0 A.).
3. The fused cut-out panel shall bear an engraved white-core phenolic or bakelite identification nameplate stating in minimum one-quarter inch (1/4") high white letters on a red background "FIRE ALARM FUSED CUT-OUT".
4. Contractor shall bring single phase three (3) wire plus ground, 120/208 volt service to the fused cut-out. The feeders shall be tapped off the main building service ahead of the main service switch but after the Current Transformers (Metering Transformers).
5. Provide fused cut-outs for fire alarm system and central office connection panel.

P. Central Office Connection Panel

1. Contractor shall provide Central Office Connection Panel from a licensed, FDNY approved, central station monitoring company. Include one (1) year of monitoring services.
2. Contractor shall include all FDNY required monitoring, but not less than the points indicated on the documents for specified fire alarm system.
3. All equipment shall be as approved by FDNY. Start of one (1) year monitoring services shall be from FDNY approval of fire alarm system.

PART 3.00 - EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

A. The Contractor shall receive and store all material and equipment necessary to the completion of the Project.

B. Store fire alarm equipment in a clean, dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.

C. Handle fire alarm equipment carefully to prevent damage, breaking, and scoring. Do not install damage equipment or components; replace with new.

3.02 INSTALLATION

A. The entire system shall be installed in a workmanlike manner, in accordance with approved manufacturer's wiring diagrams. The Contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets, fused cut-outs and similar devices necessary for the complete installation. The installing contractor or fire alarm equipment vendor shall have no less than two (2) NICET Level II fire alarm technicians and a NICET Level III project manager dedicated to this project.

B. Manufacturer's Instructions

1. In addition to the requirements of these Specifications, comply with manufacturer's instructions and recommendations for all phases of the Work.

C. Automatic Fire Alarm System Control Panel (FACP) Software Programming

1. Subsequent to equipment approval and prior to software programming of the FACP, a representative of the equipment manufacturer shall meet with a representative of the Commissioner to establish a schedule of the alarm codes to be assigned to each alarm initiating device. The alarm codes shall be three (3) digit alarm codes indicating the floor of alarm initiation, the area of alarm initiation and the type of alarm initiating device reporting the alarm condition.
2. Subsequent to equipment approval and prior to software programming of the FACP, a representative of the equipment manufacturer shall meet with a representative of the Commissioner to establish a schedule of the custom labels for each addressable device to be displayed on the alphanumeric, liquid crystal display (LCD) of the FACP.
3. The end-user shall retain complete rights and ownership to all software running in the system at all times. The fire alarm equipment vendor shall provide useable hard and soft copies of the software database to the End-User at the time of final system acceptance. The database provided shall be useable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted use and modification of the database. The extend of hardcopy database documentation to be provided shall be defined by the Commissioner prior to final system acceptance.

D. Manual Fire Alarm Stations

1. The Contractor shall furnish and install one (1) manual fire alarm stations, as directed by New York City Fire Department.
2. Manual fire alarm station shall be mounted with operating handle four feet above the finished floor (4'-0" AFF).
3. When manual fire alarm station is to be surface mounted, matching red backbox shall be provided by the equipment manufacturer.

E. Smoke Detectors

1. The Contractor shall furnish and install area smoke detectors at locations where shown on the Drawings or called for in the Specifications.
2. These smoke detectors shall be surface mounted at designated locations.

3. In general, these smoke detectors will be mounted on ceilings. The Contractor shall furnish and install a suitable surface or semi-flush backbox to which the sensor will be mounted.
4. Smoke detectors shall be installed no closer than five feet (5.0') from air registers, or within 12" of any wall.
5. Do not install smoke detector heads until the Work (including cleaning) of all trades in the building has been completed. Protect all installed smoke detector heads from airborne dust and debris, with plastic bags, until the final acceptance test. Any sensor cleaning costs, necessitated by failure to protect the smoke detector heads, shall be the responsibility of the Contractor.
6. Smoke detectors shall be installed in accordance with NFPA-72 as modified by NYC Building Code.

F. Duct Smoke Detectors
1. The Contractor shall furnish the duct smoke detectors.
2. The Contractor shall co-ordinate with the Mechanical Contractor (sheet metal tradesman) for the installation of the duct smoke detector housings.
3. The Mechanical Contractor (sheet metal tradesman) is to provide holes in the ductwork for duct smoke detector sampling and reference tubes, where shown on the HVAC Drawings.
4. The Mechanical Contractor (sheet metal tradesman) is to provide the actual installation of the duct smoke detector housings and sampling and reference tubes on and into the ductwork, where shown on the HVAC Drawings.
5. All sampling and reference tubes shall be cut to fit the interior dimensions of the ductwork being penetrated and in a manner that meets the manufacturer's criterion for an acceptable and working arrangement.
6. The Contractor shall consult the HVAC Drawings for locations of the duct smoke detectors, in order to provide adequate conduit, wiring and connections.
7. Do not install duct some detector heads until the Work (including cleaning) of all trades in the building has been completed and the air handling systems have been run for a minimum of four (4) hours. Protect all installed duct smoke detector heads from duct airborne dust and debris, with plastic bags, until the final acceptance test. Any detector cleaning costs, necessitate by failure to protect the duct smoke detector heads, shall be the responsibility of the Contractor.
8. Install a remote alarm lamp for each duct smoke detector to indicate when sensor is in alarm. Locate as directed in field and provide identification nameplate to identify location of sensor in alarm and HVAC system associated with detector.

G. Central Office Connection Panel
1. Installation shall include all required power and alarm wiring for complete system in accordance with service provider and FDNY requirements.

H. Wiring

1. All wiring shall be:
   a. Of the size and configuration type recommended by the manufacturer for each type of circuit in the system and meet the requirements below listed in b. through h.
   b. Copper conductors only. Aluminum conductors or copper clad, plated or coated aluminum conductors shall not be acceptable.
   c. Color-coded throughout.
   d. In conformance with Section 4000-06 of the Rules of the City of New York.
   e. Approved by the New York City Fire Department and New York City Building Department.
   f. A minimum of No. 12 A.W.G. for power wiring (above 75 volts) and No. 16 A.W.G. for low voltage wiring (75 volts or less), unless otherwise noted.
   g. All low voltage wiring (75 volts and less) shall be Type FPLP, 15 mil insulation, 150°C, colored red, 25 mil overall jacket, cable printing per UL1424, labeled "Classified NYC Cert. Fire Alarm Cable".
   h. All power conductors (above 75 volts) shall be TFFN, TFN, THHN, THWN, or FEP minimum 600 volts, 90°C.
2. All wires shall test free from grounds and crosses between conductors.
3. A ground wire equal in size to the largest conductor used on the system, but not less than No. 10 A.W.G., attached to the fire alarm control panel (FACP) and shall be installed in 3/4" conduit and securely connected to the grounding bus or terminal in each box or cabinet it enters. The ground wire shall be routed with the supply conductors from the fused cutout. Provide a grounding electrode conductor not less than #8 AWG to the fused cutout and install per New York City electric code.
4. Circuit wiring from the FACP to the zoning indicator panel shall be a minimum of as follows:
   a. Data communications circuit wiring: Two (2) cables, each composed of two (2) No. 16 A.W.G., twisted and shielded, copper conductors.
   b. 24 VDC, power circuit wiring: Two (2) No. 14 A.W.G., copper conductors.
5. Circuit wiring from the FACP to the system peripheral equipment shall be a minimum of as follows:
   a. Each multiple addressable peripherals network data communications circuit: Two (2) No. 16 A.W.G., twisted and shielded, copper conductors.
   b. Each duct smoke sensor/Addressable Module 24 VDC power circuit: Two (2) No. 14 A.W.G., copper conductors.
   c. Each one-way voice communication speaker circuit: Two pair of Two (2) No. 12 A.W.G. copper conductors.
6. Circuit wiring from Addressable Modules to the system peripheral equipment shall be a minimum of as follows:
   a. Each alarm initiating, supervisory or status monitoring circuit from an Addressable Monitor Module (AMM): Two (2) No. 16 A.W.G., copper conductors.
   b. Each control circuit from an Addressable Control Module (ACM): Two (2) No. 12 A.W.G., copper conductors.

7. Circuit wiring from the fire alarm control panel (FACP) to the central station transmitter location shall be a minimum of fourteen (14) No. 14 A.W.G., copper conductors.

I. Conduit and Raceways

1. All wiring shall be mechanically protected when installed exposed and in areas with no drop ceiling and when penetrating fire walls and floor slabs. All wiring in mechanical rooms, elevator equipment rooms, loading dock and garages shall be run in conduit. Only rigid heavy wall conduit, properly sized to New York City Electrical Code requirements, shall be used to provide said mechanical protection, and for all system power (over 75 volts) wiring.
2. All penetrations of floor slabs and fire walls shall be fire stopped in accordance with all local fire codes. All cable penetrations shall be sleeved (1" conduit minimum) and fire stopped.
3. Fire alarm system terminal and junction locations shall be identified in accordance with NFPA Standard 70, Section 760-10. Terminal and junction boxes shall be painted red and stenciled in white letters "FIRE ALARM", preventing unintentional interference with the fire alarm system wiring during testing, servicing and additional medications to the system.
4. Electrical conduits shall enter only at the sides or bottom of the fire alarm control panel (FACP).
5. Minimum size conduit shall be ¾".

J. 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.

K. 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, sprinkler status points. Label all addressable modules as to their function.

L. 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).

M. Auxiliary relays shall be appropriately labeled to indicate "FIRE ALARM SYSTEM" and their specific function (i.e. FAN S-1 SHUTDOWN).

N. 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).

O. All 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.

P. All 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 installing contractor to bring it, in writing, to the attention of the Commissioner. Failure to bring such issues to the attention of the Commissioner shall be the exclusive liability of the installing Electrical Contractor.

Q. Provide fire alarm control panel (FACP, system operating instructions, framed under clear Lexan or glass and mounted adjacent to the FACP.

R. Provide a reduced copy (8-1/2" x 11") of the fire alarm system riser diagram, framed under clear Lexan or glass and mounted adjacent to the fire alarm control panel (FACP).

S. The fire alarm control panel (FACP) shall be arranged to receive power from three-wire, 30 Ampere, 120/208 volt, 60 cycle alternating current supply through fused cut-out. All low voltage operation shall be provided from the FACP.

T. Fan shutdown and smoke purge fan control wiring shall be terminated by this contractor in starters or control panels as indicated on approved control wiring diagrams provided by mechanical contractor.

3.03 CLEAN UP

A. Upon completion of the installation, all debris created by the installation shall be removed from the premises or disposed of as directed by the Commissioner.

3.04 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 installing 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 Installing Contract and the Alarm System Vendor shall, upon the request of the Consulting Engineer or End-User, attend any and all project meetings for the purpose of accurately determining progress.

D. It shall be the responsibility of the installing 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 Consulting Engineer, End-User or AHJ, the installing contractor shall be responsible for the cleaning of all smoke detectors prior to final acceptance.

3.05 TESTS

A. The 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 alarm system shall be set forth with the consent of the code enforcement official, the Commissioner and the manufacturer.

C. During the final acceptance test:
   1. Every manual fire alarm station shall be tested.
   2. Every smoke sensor shall be tested using a calibrated sensitivity test method.
   3. Every heat sensor/detector shall be tested using a controllable heat source such as a blower type hair dryer.
   4. All other alarm initiating devices/connected panels shall be activated to their alarm state.
   5. The sprinkler system waterflow alarm switches shall be tested by flowing water.
   6. All other supervised devices/connected panels shall be activated to their off-normal position or state.
   7. Every system control function shall be tested for its proper operation.
   8. All supervised circuits shall be opened at two (2) locations to test for proper supervision.

D. Test Reports: Submit reports of manufacturers field testing and final acceptance test by authorities having jurisdiction.

E. Upon successful completion of all final acceptance tests, the Contractor's and Manufacturer's representatives shall each author and sign a letter confirming the successful completion of testing. Two (2) copies of each letter shall be forwarded to the Commissioner and the local Code enforcement official.

F. All final acceptance testing shall be done at a time convenient to the local Code enforcement official and the Commissioner's representatives and all testing costs shall be born by the Contractor as part of this Contract.

G. All objections noted as a result of the New York City Fire Department inspection shall be corrected and self-certified in accordance with New York City Building and Fire Code requirements by this Contractor.

3.06 DOCUMENTATION

A. The contractor shall compile and provide to the commissioners 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.

B. In addition to the above manuals, the Electrical 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 commissioners' 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 drawing showing all points of 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. Turnover of all software database hard/soft copies shall be required. This shall include all possible programming software logs, diskettes or CDs containing exported project files, hard copies of all device maps, the revision number of the version of programming utility used, and all required passwords. The turnover of all database information shall occur prior to the end of the One (1) warranty period (or period as amended earlier in this specification).

3.07 SERVICE AND MAINTENANCE

A. The equipment manufacturer shall make available a fully equipped service organization, capable of guaranteeing an on-site service response time within eight (8) hours to a service request call. Said service shall be available twenty-four (24) hours per day and seven (7) days per week.

B. The equipment manufacturer shall make available, to the Commissioner, a price quotation for a one (1) year maintenance and testing agreement.

END OF SECTION

SECTION 32 90 00

STREET TREES AND TREE PITS

Part 1 - GENERAL

1.01 Applicable provisions of the DDC General Conditions and Division #1, General Requirements, govern work in this Section.

1.02 DESCRIPTION OF WORK

A. The work of this Section consists of the provision of all plant, materials, labor and equipment and the like necessary and/or required for the complete execution of all street tree and tree pit installations for this project as required by the schedules, keynotes and drawings.

1. Provide new tree pits complete with reused/recycled granite block edging.
2. Provide new street trees and required arborist treatment for same.

B. NOTE: DPR recommends a 3 to 31/2 inch caliper B and B planting stock, with a 6 foot minimum branching height. Trees may only be planted during one of our planting seasons (October 1 - December 31 or March 1 - May 31). A qualified and insured tree-planting contractor must perform all work. Please note that all new trees are subject to an 24 month guarantee period, starting from the date of DPR acceptance. A Forestry work permit is required and the Consultant Arborist for the project must monitor all the work. Refer to the DPR planting guidelines for additional planting information.

1.03 RELATED WORK SPECIFIED ELSEWHERE - Entire Project Specification with specific reference to those sections noted above and as follows:

A. 03 30 00 - Concrete material requirements and labor restrictions.

1.04 QUALITY ASSURANCE

A. All protection work and general operations shall be governed by the requirements of OSHA, as most recently amended.

B. The Contractor shall take proper precautions not to damage any existing site conditions specifically excluded or excepted from the Contract and will be held solely responsible for any damage occurring during the course of the work under construction. The Contractor shall, at his own expense, make any and all repairs as required to restore to the original condition any area or item so damaged.

D. During the construction period, the Contractor shall take special measures including, but not limited to, wetting down, adding approved dust palliatives, etc., to control dust on site, in order to prevent annoyance and/or damage to adjacent property whether public or private.

E. The Contractor shall take all necessary measures to keep streets, over which equipment and service for project travel, clean and

free from dirt, dust, mud and debris resulting from construction operations. The actions taken shall meet the requirements of all parties having jurisdiction.

F. REFERENCE STANDARD: All work herein shall be governed by the requirements set forth in the "Standard Highway Specifications " as published by the New York City DOT dated November 1, 2010 including all latest amendments thereto.

1.05 SUBMITTALS

Submittals shall be made in groupings where installations are complementary, i.e. steel, steel decking, steel stairs, stair railings; roof systems/flashings; mechanical and electrical apparatus and the like. Failure to comply with this requirement may be cause for rejection of any or all submittals.

As set forth in the General Conditions prepare and submit a fully developed submittal schedule as outlined in Schedule "F" .

Attention is directed to General Conditions for coordination drawing requirements for this project. These drawings are critical to the proper execution of the Work and failure to honor these requirements may become the basis for denial of any and all claims for either or both "time" and "money".

The Contractor is encouraged to submit for approval products made from recycled and/or environmentally responsible material. Every effort will be made by the Commissioner to approve these materials; the substitution request procedure shall still be enforced.

A. Certification of Specification Compliance
B. Samples of all materials to be used in the work including pea gravel; granite block; topsoil; sand; planting items and the like.
C. Material Safety Data Sheet (MSDS) must be submitted for each product.

Part 2 - PRODUCTS

2.01 GENERAL

A. All materials shall be governed by the applicable portions of the REFERENCE STANDARDS set forth in Part 1 above or as maybe modified herein.

2.02 TREE PIT CONSTRUCTION

A. All materials and construction methods used are to conform to Section #4.16 of the Standard Highway Specifications. Latest edition, further the following shall govern planting soil materials:

Material shall consist of natural loam topsoil, free from subsoil, obtained from an area which has never been stripped. It shall be removed to a depth of one foot (1'), or less if subsoil is

encountered. Topsoil, shall be of uniform quality, free from hard clods, stiff clay, hard pan, sods, partially disintegrated stone, lime, cement, ashes, slag, concrete, tar residues, tarred paper, boards, chips, sticks, or any other undesirable material. No topsoil shall be delivered in a frozen or muddy condition.

Topsoil shall contain at least five percent (5%) organic matter determined by loss, on ignition, of moisture-free samples dried in accordance with the current method of the Association of Official Agricultural Chemists. The acidity range shall be pH 5.0 to pH 7.0 inclusive. The mechanical analysis of the soil shall be as follows:

SIEVE ANALYSIS: (By Wash Test, ASTM Designation C-117)

Passing 2" sieve	100%
Passing 1" sieve	95% to 100%
Passing #4 sieve	90% to 100%
Passing #100 sieve	30% to 60%

When topsoil otherwise complies with the requirements of the specifications but show a deficiency of not more than one percent (1%) in organic matter; organic matter may be incorporated when and as permitted by the Commissioner.

The Contractor shall, at the direction and discretion of the Commissioner, or when quantities exceed thirty (30) cubic yards, furnish a certified report of an approved analytical chemist showing the analysis of representative samples are to be taken by the Commissioner and delivered to the laboratory; the price bid shall include inspection and laboratory charges. No topsoil shall be delivered until approval of samples by the Commissioner, but such approval shall not constitute final acceptance. The Commissioner reserves the right to reject, on or after delivery, any material which does not, in their opinion, meet these specifications.

The Commissioner reserves the right to reject topsoil in which more than sixty percent (60%) of the material passing the No. 100 U.S.S. Mesh sieve consists of clay as determined by the Buoyoucous Hydrometer or by the decantation method. All percentages are to be based on dry weight of sample. If the Commissioner directs, topsoil which varies only slightly from the specifications may be made acceptable by such corrections as the Commissioner deems necessary.

B. Prior to the start of work, the contractor shall obtain the necessary permit from the Department Of Parks And Recreation for the removal and planting of trees.

C. Tree pits should be located two (2) feet minimum from gas. Oil or water boxes.

D. Tree stakes are to be removed by the tree subcontractor not less than one year after planting of said trees and prior to the final

acceptance of the work.

E. Cedar stakes 8' long

F. Topsoil shall be formed into a saucer around perimeter

G. Wide, flat, woven polypropylene tie at stakes.

H. Granite block on sand setting bed

I. Shredded Bark Mulch shall be a natural forest product composed of shredded bark or wood not exceeding three inches (3") in length and one inch (1") in width. Mulch shall be derived from tree material, not from wood waste or by-products like sawdust, shredded palettes, or other debris. It shall be of a uniform grade with no additives or any other treatment. Mulch with leaves, twigs, and/or debris shall not be acceptable. The pH factor should range from 5.8 to 6.2.

J. Fertilizer: Commercial Fertilizer (10-6-4 50% slow release) shall have the following composition by weight: Nitrogen, ten percent (10%), Phosphoric Acid (PO), six percent (6%), and Potash, four percent (4%). Nitrogen shall be fifty percent (50%) natural organic nitrogen of plant or animal origin. Organic fertilizer shall be cured for at least sixty (60) days and be of a free running consistency. These elements shall be available according to the methods adopted by the Association of Official Agricultural Chemists.

The Contractor shall, at the direction and discretion of the Commissioner, furnish a certified report of an approved analytical chemist, showing the chemical analysis and organic content of representative samples of the Commercial Fertilizer (10-6-4) which they propose to use. All samples are to be taken by the Commissioner, and delivered to the laboratory. The price bid shall include inspection and laboratory charges. No commercial fertilizer (10-6-4) shall be delivered until the approval of samples by the Commissioner, but such approval does not constitute final acceptance. The Commissioner reserves the right to reject, on or after delivery, any material which does not, in their opinion, meet the specifications.

All Commercial Fertilizer (10-6-4, 50% slow release) shall be delivered in standard size bags of the manufacturer, showing weight, analysis, and name of manufacturer. It shall be stored as directed by the Commissioner, in such a manner that its effectiveness will not be impaired.

2.03 TREE MATERIAL

A. Names: Plant names, size, and grading standards shall conform to those prepared by the American Association of Nurserymen Horticultural Standards, 1995 Edition, unless otherwise specified. No substitution shall be permitted except by written permission of the Commissioner.

Tree Species - Pin Oaks, caliper and height as shown on the drawings.

B. Quality: All trees shall be typical of their species or variety. They shall have normal well developed branches and vigorous fibrous root systems. They shall be sound, healthy, vigorous trees, free from defects, disfiguring knots, sunscald injuries, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All trees shall be tagged by the Director of Landscape Construction who shall reject all trees not meeting the above specifications, and trees having damaged or missing leaders, multiple leaders, Y-crotches, or indications of topping or heading back. All trees shall be nursery grown and shall have been growing under the same climatic conditions as the location of this project for at least two (2) years prior to date of contract. Trees held in storage will be rejected if they show signs of growth during storage.

C. Dimensions: Each tree shall be dimensioned as it stands in its natural position. Trees shall be callipered six inches (6") above ground. Stock furnished shall be a fair average of the minimum and maximum sizes specified.

D. PREPARATION OF TREES: All precautions customary in good trade practice shall be taken in preparing trees for moving, and workmanship that fails to meet the highest standards will be rejected. All trees shall be dug immediately before moving, unless otherwise specified. All trees shall be dug to retain as many fibrous roots as possible. Balled and burlapped trees shall have a solid ball of earth of the minimum specified size, securely held in place by burlap and stout rope or twine. Oversize or exceptionally heavy trees are acceptable if the size of the ball or spread of roots is proportionally increased, to the satisfaction of the Commissioner. Loose, broken, or manufactured balls will be rejected.

Part 3 - EXECUTION

3.01 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.02 TREE PITS

A. Construction of new tree pits shall conform to New York City DOT specifications Sections 4.11, 4.12, 4.15, 4.16 and 4.18; further,

Before any topsoil is placed, the subgrade shall be graded to a smooth, uniform surface, parallel to and below finished grade, the depths of which are or as shown on the plans or as directed by the Commissioner. The subgrade surface shall be compacted with an approved roller weighing approximately five hundred (500) pounds. Hollows, depressions and gullies shall be filled with acceptable material free from stones over two inches (2") in diameter, cinders, rubbish, and other unsuitable material. Fill which is

four inches (4") or more in depth shall be compacted to the satisfaction of the Commissioner.

All bumps, mounds and ridges shall be cut down to subgrade. All areas of the subgrade that are not in a friable condition shall be loosened to a depth of four inches (4") as directed by the Commissioner. All surplus material and debris shall be removed and disposed of as directed by the Commissioner.

Topsoil for all areas shall be spread to the compacted depths specified. Topsoil shall not be handled, when, in the opinion of the Commissioner it is too wet.

Topsoil shall be mixed with compost in the proportions of seven (7) cubic yards of topsoil to two (2) cubic yards of compost and spread to a compacted depth of nine inches (9").

3.03 TREE PLANTING

A. Planting shall be performed by an approved Subcontractor. No planting shall be done, except in the presence of the Commissioner. All material shall be inspected by the Commissioner as it is being removed from the truck, prior to placing in an approved storage area or the designated planting site. All rejected material shall be removed from the site and replaced with acceptable material at no cost to the City.

B. Place balled and burlapped material in the prepared planting pit by lifting, and carry it by the rootball. Set the tree straight and in the center of the pit, with the most desirable side facing the predominant view. All trees shall set, after settlement, at the same level at which they have grown in the nursery. Care shall be exercised in setting the trees plumb. All ropes, stones, etc. shall be removed from the pit before backfilling. The backfilling mixture shall be loose and friable, and not frozen or solid.

C. Cut and remove rope or wire from the top fifty percent (50%) of the rootball and pull the burlap back to the edge of the ball. Remove as much woven product and twine as possible. All plastic or synthetic fabric must be removed from the ball at the time of planting. Any wire basket enclosed root ball will need to have at least 2/3 of the wire basket cut away from the sides and top of the ball, and removed from the site. Remaining lateral wires must be cut to prevent future root interference. Wire must not be galvanized or aluminum wire.

D. Trees shall be handled so that the ball will not be loosened. After the soil has been thoroughly firmed under and around the ball, the burlap shall be cut away from the upper half of the ball,

E. and the remaining burlap adjusted to prevent the formation of air pockets. Where directed by the Commissioner, the burlap shall be entirely removed. Soil shall be firmed at six (6") to eight inch (8") intervals and thoroughly settled with water.

F. All ropes, stones, etc. shall be removed from the pit before backfilling. Soil for backfilling shall be loose, friable, and not frozen. Trees shall be handled so that the ball will not be loosened.

3.04 PLACEMENT OF BARK MULCH

A. Prior to application of shredded bark, commercial fertilizer (10-6-4) shall be incorporated into soil to a depth of three inches (3") at the rate of twenty pounds per thousand square feet (20 lbs./1,000 sf.)

B. Shredded bark mulch shall be applied to the surface of the beds and tree pit areas, as shown on the plans or Standard Details and as directed by the Commissioner. Mulch shall be applied to a uniform depth of three to four inches (3"-4") over the tree pit and shrub bed areas and two to three inches (2"-3") over groundcover beds, and shall be so distributed as to create a smooth level cover over the exposed soil. Plants shall not be covered.

3.05 CLEANUP

A. All debris resulting from operations shall be removed daily and site shall be left clean at the completion of the Project.

3.06 WASTE MANAGEMENT

A. Separate and recycle materials and material packaging in accordance with Waste Management Plan and to the maximum extent economically feasible and place in designated areas for recycling.

B. Set aside and protect materials suitable for reuse and/or remanufacturing.

C. Separate and fold up metal banding; flatten and place along with other metal scrap for recycling in designated area.

End of Section

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EP6-KENT2: DEP Shaft Maintenance Building

Louver Schedule

LOUVER NUMBER	LOCATION		UNIT		DETAIL	FINISH	NOTES
	FLR	ROOM NAME	W	H			
	Cellar						
L-1	Cellar	002 Storage	86"	54"	1/A-852 sim.	Ptd. Aluminum	
L-2	Cellar	002 Storage	86"	54"	1/A-852 sim.	Ptd. Aluminum	
	First Floor						
L-3	1st floor	109 Office	84"	66"	1/A-852	Ptd. Aluminum	
	Second Floor						
L-4	2nd floor	204 Map room	45"	42"	2/A-851	Ptd. Aluminum	(2x) per window
L-5	2nd floor	204 Map room	45"	42"	2/A-851	Ptd. Aluminum	(2x) per window

APPENDIX #1: LOUVER SCHEDULE

EP6-KENT2: DEP Shaft Maintenance Building
Light Schedule

TYPE	DESCRIPTION	LOCATION	MANUFACTURER	PRODUCT	COLOR/ FINISH	LAMPING
LA	Recessed Fluorescent	Office 110, Women's Locker 210	Cooper - Metalux	2AC2-232BI-UNV-EB83-U		(2) T8
LB	Suspended Direct/ Indirect	Maproom	Ledalight	Thrive 7216-T03-W-N-20'-2-120-E-W 18" Suspension Length	Standard White	(2) T8
LC	Suspended Wall Wash	Maproom	Cooper - Metalux	SNSeries SN-1-32-120V-EB-8-1-U w/ SN-REV-4-1 reflector 18" Suspension Length	White	(1) T8
LD	Suspended Linear Fluorescent	Pumproom	Cooper - Metalux	SNSeries 8T-SN-1-32-120V-EB-8-1-U 18" Suspension Length	White	(1) T8
LE	Wall Mount Linear Fluorescent	Toilet 116, Stairs	Cooper - Fail-Safe	FWW-232-120-EB82	White	(2) T8
LF	Suspended Linear Fluorescent	Gas Service	Cooper - Metalux	SNSeries SN-1-32-120V-EB-8-1-U w/ SN-REV-4-1 reflector 18" Suspension Length	White	(1) T8

APPENDIX #2: LIGHT SCHEDULE

EP6-KENT2: DEP Shaft Maintenance Building
Window Schedule

EAST ELEVATION			existing window to remain
1-1	first	sinlge bay	existing window to remain
1-2	second	single bay	existing window to remain
1-3	third	double bay	existing window to remain
2-1	first	double bay	existing window to remain
2-2	second	double bay	existing window to remain
2-3	third	double bay	existing window to remain
3-1	first	double bay	existing window to remain
3-2	second	double bay	existing window to remain
3-3	third	double bay	existing window to remain
4-1	first	double bay	existing window to remain
4-2	second	double bay	existing window to remain
4-3	third	double bay	existing window to remain
5-1	first	double bay	existing window to remain
5-2	second	double bay	existing window to remain
5-3	third	double bay	existing window to remain
6-1	first	double bay	existing window to remain
6-2	second	double bay	existing window to remain
6-3	third	double bay	existing window to remain
7-1	first	double bay	existing window to remain
7-2	second	double bay	existing window to remain
7-3	third	double bay	existing window to remain
8-1	first	double bay	existing window to remain
8-2	second	double bay	existing window to remain
8-3	third	double bay	existing window to remain
9-1	first	double bay	existing window to remain
9-2	second	double bay	existing window to remain
9-3	third	double bay	existing window to remain
10-1	first	double bay	existing window to remain
10-2	second	double bay	existing window to remain
10-3	third	double bay	existing window to remain
11-1	first	single bay	existing window to remain
11-2	second	single bay	existing window to remain
11-3	third	double bay	existing window to remain

EP6-KENT2: DEP Shaft Maintenance Building
Window Schedule

window #	floor	Type	
NORTH ELEVATION			existing window to remain
12-1	first	single bay	existing window to remain
12-2	second	single bay	existing window to remain
12-3	third	single bay	existing window to remain
13-0	basement	Mechanical Louver	see mech. For details
13-1	first	double bay	existing window to remain
13-2	second	double bay	existing window to remain
13-3	third	double bay	existing window to remain
14-1	first	double bay	existing window to remain
14-2	second	double bay	existing window to remain
14-3	third	double bay	existing window to remain
15-0	basement	**CMU fill with stucco finish**	
15-1	first	double bay	existing window to remain
15-2	second	double bay	existing window to remain
15-3	third	double bay	existing window to remain
16-1	first	single bay	existing window to remain
16-2	second	single bay	existing window to remain
16-3	third	double bay	existing window to remain
17-0	basement	areaways below grade temporarily blocked	existing window to remain
17-1	first	triple bay	existing window to remain
17-2	second	triple bay	existing window to remain
18-2	second	triple bay	existing window to remain
19-0	basement	areaways below grade temporarily blocked	existing window to remain
19-1	first	triple bay	existing window to remain
19-2	second	triple bay	existing window to remain
20-1	first	single bay	existing window to remain
20-2	second	single bay	existing window to remain
20-3	third	double bay	existing window to remain
21-0	basement	**CMU fill with stucco finish**	gas service louver
21-1	first	double bay	existing window to remain
21-2	second	double bay	existing window to remain
21-3	third	double bay	existing window to remain
22-1	first	double bay	existing window to remain
22-2	second	double bay	existing window to remain
22-3	third	double bay	existing window to remain
23-0	basement	Mechanical Louver	see mech. For details
23-1	first	double bay	existing window to remain
23-2	second	double bay	existing window to remain
23-3	third	double bay	existing window to remain
24-1	first	single bay	existing window to remain
24-2	second	single bay	existing window to remain
24-3	third	double bay	existing window to remain

EP6-KENT2: DEP Shaft Maintenance Building
Window Schedule

WEST ELEVATION			
25-1	first	single bay	existing window to remain
25-2	second	single bay	existing window to remain
25-3	third	double bay	existing window to remain
26-1	first	double bay	existing window to remain
26-2	second	double bay	existing window to remain
26-3	third	double bay	existing window to remain
27-1	first	double bay	existing window to remain
27-2	**second**	**(2) 3'-9"x4'-6"" (VIF) fixed windows with louvers above**	**see 2/A-851**
27-3	third	double bay	existing window to remain
28-1	first	double bay	existing window to remain
28-2	second	double bay, fixed storm window at interior	**fixed storm window at interior; see 3/A-851**
28-3	third	double bay	existing window to remain
29-1	first	double bay	existing window to remain
29-2	second	double bay	**fixed storm window at interior; see 3/A-851**
29-3	third	double bay	existing window to remain
30-1	first	double bay	existing window to remain
30-2	second	double bay	**fixed storm window at interior; see 3/A-851**
30-3	third	double bay	existing window to remain
31-1	first	double bay	existing window to remain
31-2	**second**	**(2) 3'-9"x 4'-6"" (VIF) fixed windows with louvers above**	**see 2/A-851**
31-3	third	double bay	existing window to remain
32-1	first	existing blocked up opening with CMU	existing window to remain
32-2	second	double bay	existing window to remain
32-3	third	double bay	existing window to remain
33-1	first	existing blocked up opening with CMU	existing window to remain
33-2	second	double bay	existing window to remain
33-3	third	double bay	existing window to remain
34-1	first	existing blocked up opening with CMU	existing window to remain
34-2	second	single bay	existing window to remain
34-3	third	double bay	existing window to remain

EP6-KENT2: DEP Shaft Maintenance Building
Window Schedule

window #	floor	Type	Notes
36-1	first	single bay	existing window to remain
36-2	second	single bay	existing window to remain
36-3	third	single bay	existing window to remain
37-1	first	existing blocked up opening with CMU	**Stucco Finish**
37-2	second	double bay	existing window to remain
37-3	third	double bay	existing window to remain
38-1	first	existing blocked up opening with CMU	**Stucco Finish**
38-2	second	double bay	existing window to remain
38-3	third	double bay	existing window to remain
39-1	first	existing blocked up opening with CMU	**Stucco Finish**
39-2	second	double bay	existing window to remain
39-3	third	double bay	existing window to remain
40-1	first	existing blocked up opening with CMU	**Stucco Finish**
40-2	second	single bay	existing window to remain
40-3	third	double bay	existing window to remain
40-4	roof dormer	double bay	existing window to remain
41-1	first	existing blocked up opening with CMU	**Stucco Finish**
41-2	second	triple bay	existing window to remain
41-3	third	triple bay	existing window to remain
42-2	second	triple bay	existing window to remain
42-3	third	triple bay	existing window to remain
43-1	first	existing blocked up opening with CMU	**Stucco Finish**
43-2	second	triple bay	existing window to remain
43-3	third	triple bay	existing window to remain
44-1	first	existing blocked up opening with CMU	**Stucco Finish**
44-2	second	single bay	existing window to remain
44-3	third	double bay	existing window to remain
44-4	roof dormer	double bay	existing window to remain
45-1	first	existing blocked up opening with CMU	**Stucco Finish**
46-1	first	**Mechanical louver and CMU fill**	**Stucco Finish**
47-1	first	existing blocked up opening with CMU	**Stucco Finish**
45-2	second	double bay	existing window to remain
46-2	second	double bay	existing window to remain
47-2	second	double bay	existing window to remain
45-3	third	double bay	existing window to remain
46-3	third	double bay	existing window to remain
47-3	third	double bay	existing window to remain
48-1	first	existing blocked up opening with CMU	**Stucco Finish**
48-2	second	single bay	existing window to remain
48-3	third	double bay	existing window to remain

EP6-KENT2: DEP Shaft Maintenance Building
Window Schedule

window #	floor	Type	Notes
COURTYARD ELEVATION			
48-2	second	triple bay	Existing Windows to Remain; Ornamental Cast Iron to be removed at Courtyard
48-3	third	triple bay	
49-2	second	triple bay	
50-2	second	triple bay	
51-2	second	triple bay	
52-2	second	triple bay	
52-3	third	triple bay	
53-2	second	triple bay	
53-3	third	triple bay	
54-2	second	triple bay	
54-3	third	triple bay	
55-2	second	triple bay	
55-3	third	triple bay	
56-2	second	triple bay	
56-3	third	triple bay	

EP6-KENT2: DEP Shaft Maintenance Building
Door Hardware Schedule

Note: Hardware to be provided by client agency (N.I.C.),installed by GC

HARDWARE TYPE	QUANTITY	COMPONENTS	MANUFACTURER	MODEL #	COLOR	NOTES
A		Existing Hardware to remain				
B	4	Hinges	McKinney	TA2714 4.5 x 4.5		
	3	Door Silencers	Rockwood	608	Grey	gas service
	1	Lockset	Marks	95F/26D S3	26D	
	1	Closer	Norton	7500		
C	8	Hinges	McKinney	TA2714 4.5 x 4.5		pump room
	2	Door Silencers	Rockwood	608	Grey	
	1	Lockset	Marks	95F/26D S3		
	1	Lockset	Marks	95DO/26D		
	1	Set Flushbolt	Adams Rite	1870		
D	4	Hinges	McKinney	TA2714 4.5 x 4.5		
	3	Door Silencers	Rockwood	608	Grey	main office
	1	Lockset	Marks	95A/26D S3	26D	
	1	Closer	Norton	7500		
E	4	Hinges	McKinney	TA2714 4.5 x 4.5		
	3	Door Silencers	Rockwood	608	Grey	women's locker
	1	Lockset	Marks	95S/26D S3	26D	repair shop
	1	Closer	Norton	7500		
F	1	Exit Device	Sargent	1131 43 8804 ETL		Balance of Hardware by Wire Partition Manufacturer
	1	Closer	Norton	7500		stair doors
G		Storage Hardware by Wire Partition Manufacturer				
H	4	Hinges	McKinney	TA2714 4.5 x 4.5		third floor stairs
	3	Door Silencers	Rockwood	608	Grey	
	1	Lockset	Marks	95N/26D S3	26D	
	1	Closer	Norton	7500		
J	8	Hinges	McKinney	TA2714 4.5 x 4.5		Map Room
	2	Door Silencers	Rockwood	608	Grey	
	1	Lockset	Marks	95S/26D S3		
	1	Lockset	Marks	95DO/26D		
	1	Set Flushbolt	Adams Rite	1870		
K	4	Hinges	McKinney	TA2714 4.5 x 4.5		Maproom
	3	Door Silencers	Rockwood	608	Grey	
	1	Lockset	Marks	95S/26D S3		
M	4	Hinges	McKinney	TA2714 4.5 x 4.5		ADA toilet
	3	Door Silencers	Rockwood	608	Grey	
	1	Lockset	Marks	95L/26D S3		
N	2	Hinges, Panic Hardware and Closer by Coiling Door Manufacturer				
P	4	Hinges	McKinney	TA2714 4.5 x 4.5		

EP6-KENT2: DEP Shaft Maintenance Building
Door Hardware Schedule

Note: Hardware to be provided by client agency (N.I.C.),installed by GC

3	Door Silencers	Rockwood	608	Grey
1	Lockset	Marks	95N/26D S3	26D
1	Closer	Norton	7500	

APPENDIX #4: DOOR HARDWARE SCHEDULE

EP6-KENT2: DEP Shaft Maintenance Building

Door Schedule

Note: Hardware to be provided by client agency (N.I.C.),installed by GC, hardware sets shown for reference.

DOOR NUMBER	LOCATION		DESCRIPTION	SWING	UNIT		DOOR THICKNESS	DOOR TYPE	FRAME	FINISH	DETAIL	HRDW. SET (FOR REFERENCE ONLY, N.I.C.)	NOTES
	FLR	ROOM NAME			W	H							
	Cellar												
0-01	Cellar	Stair B	Existing door to remain					A				A	
0-02	Cellar	Stair C	Existing Door to remain					A				A	
0-03	Cellar	Stair A	Existing Door to remain					A				A	
0-04	Cellar	004 boiler room	Existing Door to remain					A				A	
0-05	Cellar	001 remediation	Existing Door to remain					A				A	
0-06	Cellar	001 remediation	Existing Door to remain					A				A	
0-07	Cellar	005 Pump Room	90 Min. Rated		6'-0"	7'-0"	1-3/4"	C	Mtl	ptd.	3/A-003	C	
0-08	Cellar	006 Gas Service	90 Min. Rated		3'-0"	7'-0"	1-3/4"	C	Mtl	ptd.	4/A-003	B	
0-09	Cellar	002 Garage	90 Min. Rated		30"	48"		G	Mtl	26D			
0-10	Cellar	Stair A	Cage Door		3'-0"	7'-0"	1-3/4"	K	Mtl	ptd.	9/A-003	G	Safety Yellow
0-11	Cellar	Stair B	Cage Door		3'-0"	7'-0"	1-3/4"	K	Mtl	ptd.	9/A-003	G	Safety Yellow
0-12	Cellar	Stair C	Cage Door		3'-0"	7'-0"	1-3/4"	K	Mtl	ptd.	9/A-003	G	Safety Yellow
	First Floor												
1-01	1st floor	112 garage entry court	overhead door	n/a				E			1/A-851, 18/A-001	M	(2) egress doors within overhead door
1-02	1st floor	110 office	Existing Door to remain					A					
1-03	1st floor	110 office	45 Min. Rated		3'-0"	7'-0"	1-3/4"	D	Mtl	ptd.	4/A-003	D	
1-04	1st floor	109 office	Existing opening					A				A	
1-05	1st floor	111 toilet room	Existing Door to remain					A				A	
1-06	1st floor	109 office	Existing Door to remain					A				A	
1-07	1st floor	107	Existing Door to remain					A				A	
1-08	1st floor	stair b	Existing Door to remain					A				A	
1-09	1st floor	stair b	Existing Door to remain					A				A	
1-10	1st floor	106 storage	Existing Door to remain					A				A	
1-11	1st floor	105 metal	45 Min. Rated		8'-0"	7'-0"	1-3/4"	C	Mtl	ptd.	3/A-003	C	
1-12	1st floor	104 machine	Existing Door to remain					N/A				A	
1-13	1st floor	102 repair shop	Existing Door to remain					N/A				A	
1-14	1st floor	102 repair shop	45 Min. Rated		3'-0"	7'-0"	1-3/4"	D	Mtl	ptd.	4/A-003	J	
1-15	1st floor	103 storage	Existing Door to remain					A				A	
1-16	1st floor	101 garage	overhead door	n/a	match	match		J			18/A-001	N	
1-17	1st floor	stair c	Existing Door to remain					A				A	
1-18	1st floor	116 toilet room	45 Min. Rated		3'-0"	7'-0"	1-3/4"	F	Mtl	ptd.		M	louvered door
1-19	1st floor	115 storage	45 Min. Rated		3'-0"	7'-0"	1-3/4"	D	Mtl	ptd.		M	
1-20	1st floor	115 storage	45 Min. Rated		3'-0"	7'-0"	1-3/4"	D	Mtl	ptd.		M	
1-21	1st floor	stair a	Existing Door to remain					A				A	
1-22	1st floor	113 office	Existing Door to remain					A					Door to be permanently locked
1-23	1st floor	stair a	Existing Door to remain					A				A	
1-24	1st floor	stair c	Existing Door to remain					A				A	
1-25	1st floor	stair c	Wire Partition Door		3'-0"	7'-0"		K		ptd	9/A-003	F	Safety Yellow
1-26	1st floor	stair a	Wire Partition Door		3'-0"	7'-0"		K		ptd	9/A-003	F	Safety Yellow
1-27	1st floor	stair b	Wire Partition Door		3'-0"	7'-0"		K		ptd	9/A-003	F	Safety Yellow
	Second Floor												
2-01	2nd floor	210 Womens	45 Min. Rated		3'-0"	7'-0"	1-3/4"	F	Mtl	ptd.		E	louvered door
2-02	2nd floor	209 office	Existing Door to remain					A				A	

APPENDIX #5: DOOR SCHEDULE

DOOR NUMBER	LOCATION		DESCRIPTION	SWING	UNIT		DOOR THICKNESS	DOOR TYPE	FRAME	FINISH	DETAIL	HRDW. SET (FOR REFERENCE ONLY, N.I.C.)	NOTES
	FLR	ROOM NAME			W	H							
2-03	2nd floor	208 toilet	Existing Door to remain					A				A	
2-04	2nd floor	208 toilet	Existing Door to remain					A				A	
2-05	2nd floor	207 storage room 1	Existing Door to remain					A				A	
2-06	2nd floor	stair b	Existing Door to remain					A				A	
2-07	2nd floor	218 corridor	Existing Door to remain					B				A	
2-08	2nd floor	206 break room	Existing Door to remain					A				A	
2-09	2nd floor	205 office	Existing Door to remain					A				A	
2-10	2nd floor	204 map room	45 Min. Rated		3'-0"	7'-0"	1-3/4"	D	Mtl	ptd.	13/A-001	K	
2-11	2nd floor	204 map room	45 Min. Rated		6'-0"	7'-0"	1-3/4"	C	Mtl	ptd.	13/A-001	J	
2-12	2nd floor	204 map room	Existing Door and jamb to be removed; masonry fill					N/A			9/A-001	A	
2-13	2nd floor	219 toilet	Existing Door to remain					A				A	
2-14	2nd floor	203 meeting	Existing Door to remain					B					
2-15	2nd floor	217 corridor	Existing Door and jamb to be removed					N/A					
2-16	2nd floor	stair c	Existing Door to remain					A				A	
2-17	2nd floor	201 electricians shop	Existing Door and jamb to be removed; masonry fill										
2-18	2nd floor	201 electricians shop	Existing Door to remain					B				A	
2-19	2nd floor	215 plumbers shop	Existing Door to remain					A				A	
2-20	2nd floor	214 locker room	Existing Door to remain					A				A	
2-21	2nd floor	216 storage room 3	Existing Door to remain					A				A	
2-22	2nd floor	214 locker room	Existing Door to remain					A				A	
2-23	2nd floor	stair a	Existing Door to remain					A				A	
2-24	2nd floor	212 wash room	Existing Door to remain					A				A	
2-25	2nd floor	211 toilet room	Existing Door to remain					A				A	
	Third Floor												
3-01	3rd floor	302 corridor	90 Min. Rated					D				P	
3-02	3rd floor	302 corridor	90 Min. Rated					D				P	
3-03	3rd floor	stair b	Existing Door to remain					A				H	
3-04	3rd floor	303 toilet	Existing Opening to remain					N/A					
3-05	3rd floor	stair c	Existing Door to remain					A				A	
3-06	3rd floor	301 storage	Existing Door and jamb to be removed										
3-07	3rd floor	304 stock room	Existing Door to remain					A				A	
3-08	3rd floor	to roof	Existing Door to remain					A				A	
3-09	3rd floor	stair a	Existing Door to remain					A				H	
3-10	3rd floor	301 storage	Existing Door to remain					N/A				A	
3-11	3rd floor	301 storage	8'x61' security partition w/ integrated sliding door					H				G	Safety Yellow
3-12	3rd floor	301 storage	8'x61' security partition w/ integrated sliding door					H				G	Safety Yellow

APPENDIX #5 : DOOR SCHEDULE

DOOR NUMBER	LOCATION		DESCRIPTION	SWING	UNIT		DOOR THICKNESS	DOOR TYPE	FRAME	FINISH	DETAIL	HRDW. SET (FOR REFERENCE ONLY, N.I.C.)	NOTES
	FLR	ROOM NAME			W	H							
	Fourth Floor												
4-01	4th floor	401 Roof Access	90 Min. Rated		3'-0"	7'-0"	1-3/4"	D	Mtl	ptd.		P	
4-02	4th floor	401 Roof Access	90 Min. Rated		3'-0"	7'-0"	1-3/4"	D	Mtl	ptd.		P	

APPENDIX #5: DOOR SCHEDULE

EP6-KENT2: DEP Shaft Maintenance Building

Toilet Accessories

ITEM	MANUFACTURER	MODEL	FINISH	NOTES
ADA stall grab bar 36"	Bobrick	B-6806x36	satin	
ADA stall grab bar 42"	Bobrick	B-6806x42	satin	
ADA stall grab bar 18"	Bobrick	B-6806x18	satin	
ADA shower grab bar 48"	Bobrick	B-6806x48	satin	
ADA shower grab bar 24"	Bobrick	B-6806x24	satin	
Shower rod				
Sanitary napkin disposal	Bobrick	B-270	stainless steel	
Toilet tissue dispenser	Bobrick	B-4288	stainless steel	
Soap Dispenser	Bobrick	B-8226	polished chrome	
Paper Towel Dispenser / Waste Receptacle	Bobrick	B-3699	stainless steel	Surface mount

EP6-KENT2: DEP Shaft Maintenance Building
Plumbing Schedule

ROOM	ITEM	QTY	MANUFACTURER	MODEL	FINISH	NOTES
First Floor						
116 Toilet Room	toilet	1	Kohler	Kingston K-4330	white	
	toilet flush valve	1	Sloan	Uppercut Dual Flush WES-111	chrome	
	lavatory	1	Kohler	Soho Wall Mount Lavatory K-2084-L	white	Wall mounted sink with strainer
	lav faucet	1	Kohler	K-10952	chrome	*Sensor activated electronic gooseneck; ADA*
	lav drain		Kohler			drain to coordinate w/ lav and faucet
	service sink	1	Kohler	Whitbey K-6710	white	
	service sink faucet	1	Kohler	K-8928	chrome	
Second Floor						
210 Women's Locker Room	toilet	4	Kohler	Kingston K-4330	white	
	toilet flush valve	4	Sloan	Uppercut Dual Flush WES-111	chrome	
	lavatory	4	Kohler	Soho Wall Mount Lavatory K-2084-L	white	Wall mounted sink with strainer
	lav faucet	4	Kohler	K-10952	chrome	
	lav drain	4	Kohler			drain to coordinate w/ lav and faucet
	shower compartment	4	Best Bath	LSS3838B5T	White	
	shower valve trim	4	Kohler	K-T9492-4	chrome	
	pressure balance valve	4	Kohler	K-304-KS	NA	
	shower head	4	Kohler	K-10240	chrome	

APPENDIX #7: PLUMBING SCHEDULE

EP6-KENT2: DEP Shaft Maintenance Building
Finish Schedule

		Walls				Floor	Ceiling	Base	Notes
Rm #	Room Name	N	E	S	W				
Cellar									
001	Remediation Room	N/A	N/A	N/A	N/A	N/A	N/A	N/A	*
002	Garage	W-1	W-1	W-1	W-1	CR-1	C-1, C-4	N/A	a
003	Not Used								
004	Boiler Room	W-1	W-1	W-1	W-1	CR-1	C-1	N/A	*
005	Pump Room	W-2	W-2	W-2	W-2	CR-2	C-1		
006	Gas Service	W-2	W-2	W-2	W-2	CR-2	C-1		
1st Floor									
101	Garage	W-1	W-1	W-1	W-1	CR-3	C-1		b
102	Repair Shop	N/A	N/A	N/A	N/A	N/A	N/A		
103	Storage	N/A	N/A	N/A	N/A	N/A	N/A		
104	Machine Shop	N/A	N/A	W-1	N/A	N/A	N/A		
105	Storage	N/A	N/A	N/A	N/A	N/A	N/A		
106	Storage	N/A	N/A	N/A	N/A	N/A	N/A		
107	Storage	N/A	N/A	N/A	N/A	N/A	N/A		
108	Toilet	W-1	W-1	W-1	W-2	CR-1	C-1		c
109	Office	N/A	N/A	N/A	N/A	N/A	N/A		
110	Office	W-1	W-1	W-1,W-2	W-1,W-2	RF-1	ACT-1	B-1	d
111									
112	Entry Court	W-1	W-1	W-1	W-1	CR-3	C-1		
113	Office	N/A	N/A	N/A	N/A	N/A	N/A		
114	Toilet	N/A	N/A	N/A	N/A	N/A	N/A		
115	Storage	W-2	W-2	W-1	W-1	CR-3	C-1		
116	Toilet	CT-2,W-2	CT-2,W-2	CT-2,W-2	CT-2,W-1	CT-1	C-2		
2nd Floor									
200	Corridor	W-2	W-2	W-2	W-2	N/A	N/A		
201	Electricians Shop	N/A	N/A	N/A	N/A	N/A	N/A		
202	Storage	W-1	W-1	W-1	W-1	N/A	N/A		
203	Meeting Room	N/A	N/A	N/A	N/A	N/A	N/A		
204	Map Room	W-3	W-3	W-3	W-3	CT-1	ACT-1		
205	Office	N/A	N/A	N/A	N/A	N/A	N/A		
206	Break Room	N/A	N/A	N/A	N/A	N/A	N/A		
207	Storage	N/A	N/A	N/A	N/A	N/A	N/A		
208	Toilet	N/A	N/A	N/A	N/A	N/A	N/A		
209	Office	N/A	N/A	N/A	N/A	N/A	N/A		
210	Women's Locker	W-4	CT-2/W-4	W-4	CT-2/W-4	CT-1	ACT-2		
211	Toilet	N/A	N/A	N/A	N/A	N/A	N/A		
212	Wash Room	N/A	N/A	N/A	N/A	N/A	N/A		
213	Shower Room	N/A	N/A	N/A	N/A	N/A	N/A		
214	Locker Room	N/A	N/A	N/A	N/A	N/A	N/A		
215	Plumber's Shop	N/A	N/A	N/A	N/A	N/A	N/A		
3rd Floor									
300	Office	N/A	N/A	N/A	N/A	N/A	N/A		
301	Storage	W-1	W-1	W-1	W-1	CR-1	C-1		
302	Corridor	W-1	W-1	W-1	W-1	N/A	N/A		
303	Not Used								
304	Not Used								
305	Not Used								

EP6-KENT2: DEP Shaft Maintenance Building
Finish Schedule

306	Storage	W-1	W-1	W-1	W-1				
4th Floor									
401	Roof Access	N/A	N/A	N/A	N/A				

*

FMS ID: **EP6-KENT2**

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
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 WORK**

Rehabilitation and Upgrade of DEP Shaft Maintenance Building

LOCATION: **356 Flushing Avenue**
BOROUGH: **Brooklyn 11215**
CITY OF NEW YORK

Contractor

Dated _____ , 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____ , 20____