



PROJECT ID:

HH112WBLR

LAW DEPARTMENT

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](http://www.nyc.gov/buildnyc)

LAW DEPARTMENT

VOLUME 1 OF 3

# BID BOOKLET

FOR FURNISHING ALL LABOR AND MATERIALS  
NECESSARY AND REQUIRED FOR:

## Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project

LOCATION:  
BOROUGH:  
CITY OF NEW YORK

Clarks Thomas Building, HELP SEC Building,  
Keener Building, Wards Island  
Manhattan 10035

CONTRACT NO. 1

GENERAL CONSTRUCTION WORK

Dept of Homeless Services

Cosentini Associates



Date:

March 25, 2013

11.3-046





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

DAVID J. BURNEY, FAIA  
Commissioner

CAROL DIAGOSTINO  
Agency Chief  
Contracting Officer

August 20, 2013

CERTIFIED MAIL - RETURN RECEIPT REQUEST

BQE INDUSTRIES, INC  
40-49 72nd STREET  
WOODSIDE, NY 11377

RE: FMS ID: HH112WBLR  
E-PIN: 85013B0101  
DDC PIN: 8502013HL0004C  
INSTALLATION OF NEW CENTRAL  
BOILER PLANT AND FUEL TANKS FOR  
WARDS ISLAND PROJECT - BOROUGH  
OF MANHATTAN  
**NOTICE OF AWARD**

Dear Contractor:

You are hereby awarded the above referenced contract based upon your bid in the amount of \$6,443,451.40 submitted at the bid opening on June 10, 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, 1<sup>st</sup> 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,

*Carol DiAgostino for C.D.*

Carol DiAgostino



#2

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

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

PROJECT ID: HH112WBLR

Installation of New Central Boiler Plant and Fuel Tanks for Wards Island  
Project  
Clarks Thomas Building, HELP SEC Building, Keener Building, Wards Islar  
Manhattan 10035

Name of Bidder: BGE INDUSTRIES INC

Date of Bid Opening: 6/10/13

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

Place of Business of Bidder: 40-49, 72 STREET, WOODSIDE, NY 11377

Bidder's Telephone Number: 718-429-1648 Bidder's Fax Number: 718-429-7442

Bidder's Email Address: info@bgeindustries.org

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: Pankas Kumar  
10 Schoolhouse Lane, Roslyn Height, NY

Name and Home Address of Secretary: Pankas Kumar  
10 Schoolhouse Lane, Roslyn Height, NY

Name and Home Address of Treasurer: Pankas Kumar  
10 Schoolhouse Lane, Roslyn Height, NY





BID FORM

PROJECT ID: HH112WBLR

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 Labor

Total Price for Material Sold and Delivered

\$ 3,178,946.80 + \$ 3,196,504.60

Total Price for Item A \$ 6,375,451.40

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

\$45,000.00

- C. AMOUNT for Proprietary Items (page 2a)

\$23,000.00

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

\$ 6,443,451.40

BIDDER'S SIGNATURE AND AFFIDAVIT

WARNING!! Failure to comply with items below will result in the rejection of your bid.

6/10/13 P.8

\* **SUBCONTRACTORS:** You MUST complete and submit the form entitled "Bidder's Identification of Subcontractors" (See 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

\* **MWBE GOALS:** You MUST complete and submit the Affirmations contained in the Subcontractor Utilization Plan (See Page 7), or a pre-approved waiver (See Page 9), at the time you submit your bid. You must submit the Affirmations (or a pre-approved waiver) in BID ENVELOPE #1.

Bidder: BRE INDUSTRIES INC

By: [Signature]  
(Signature of Partner or corporate officer)

Attest: [Signature]  
(Corporate Seal) Secretary of Corporate Bidder

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



**BID FORM (TO BE NOTARIZED)**

\*\*\*\*\*  
**AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL**

STATE OF NEW YORK, COUNTY OF \_\_\_\_\_ ss:  
\_\_\_\_\_ 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 Queens ss:  
Pankas Kumar being duly sworn says:

I am the President of the above named corporation whose name is subscribed to and which executed  
the foregoing bid. I reside at 10 Schoolhouse Lane, Roslyn Height, N.Y.  
I have knowledge of the several matters therein stated, and they are in all respects true.

[Signature]  
(Signature of Corporate Officer who signed the Bid)

Subscribed and sworn to before me this  
3rd day of June, 2013

[Signature]  
Notary Public

ROBERT GUERRERO  
Notary Public, State of New York  
No. 4787428  
Qualified in Queens County  
Certificate Filed in New York and Nassau Counties  
Commission Expires Oct. 31, 2013



**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: BQE INDUSTRIES INC  
Address: 40-49, 72 STREET  
City: WOODSIDE State: NY Zip Code: 11377


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

11-3181881

By: \_\_\_\_\_  
Signature: 

Title: PRESIDENT

If a corporation, place seal here

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

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



Qualification Form

Project ID: HH112W13LR

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: BQE INDUSTRIES INC

Name of Project: CIEMENTE SOTO VELEZ CULTURAL CENTER

Location of Project: 107 SUFFOLK ST, NY, NY

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

Name: MEDHAT AZAR

Title: NYCDDC PROJECT MANAGER . Phone Number: \_\_\_\_\_

Brief description of work completed: ROOFING, MASONRY, WINDOWS, ASBESTOS ABATEMENT

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

Amount of Contract: \$ 5,440,608.00

Date of Completion: 11/10/2012

Name of Contractor: BQE INDUSTRIES INC

Name of Project: EAST HARLEM HEALTH CENTER

Location of Project: 158 E 115TH STREET, NY, NY

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

Name: JOHN KANISZAK

Title: NYCDDC PROJECT MANAGER . Phone Number: 917-731-6771

Brief description of work completed: ROOFING, MASONRY, CONCRETE, WINDOWS, RAILINGS, STRUCTURAL STEEL, HANDI LIFT

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

Amount of Contract: \$ 3,135,000.00

Date of Completion: 9/15/2012





Qualification Form

Project ID: HH112WBRL

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: BQE INDUSTRIES INC  
Name of Project: WILLIAMSBURGH OVAL RECREATION CENTER  
Location of Project: 3225 RESERVOIR OVAL EAST, BRONX, NY

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

Name: EMMANUEL NWOKELO  
Title: DPR PROJECT MANAGER Phone Number: 646-879-6573

Brief description of work completed: MASONRY, ROOF, CONCRETE, PAVERS, DOORS & INTERIOR PAINTING

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

Amount of Contract: \$ 3,692,541.54

Date of Completion: 10/12/12

Name of Contractor: BQE INDUSTRIES INC

Name of Project: AUBURN FAMILY RESIDENCE

Location of Project: BROOKLYN, NY

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

Name: ALEX KHARNAK  
Title: NYC DDC PROJECT MANAGER Phone Number: 646-210-4059

Brief description of work completed: MASONRY & ROOFING

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

Amount of Contract: \$ 7,550,655.00

Date of Completion: 6/27/2009



Qualification Form

Project ID: HH112 WBLR

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: DBE INDUSTRIES INC

Name of Project: LA GUARDIA COLLEGE BLDG # C

Location of Project: 29-10 THOMSON AVE, L.I.C, NY 11101

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

Name: MARY ANDERSON - DAS NY

Title: PROJECT MANAGER. Phone Number: 718-609-2558

Brief description of work completed: ROOFING, MASONRY, WINDOWS, SKYLIGHT, Structural steels

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

Amount of Contract: \$ 4,278,000

Date of Completion: June 2008

\*\*\*\*\*

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:



Installation of New Central Boiler Plant and Fuel Tanks for Wards  
 Project: Island  
 Clark Thomas Building, HELP SEC Building, & Keener Building at  
 Location: Wards Island

DDC ID: HH112WB/LR  
 Sponsor Agency: Dept of Homeless Services

Bidder:

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
	<b>CONTRACT 1 - GENERAL CONSTRUCTION WORK (CLARK THOMAS BUILDING)</b>							
<b>Div 1</b>	<b>GENERAL REQUIREMENTS</b>							
010000	MOBILIZATION	1	LS	10,000.00	10,000.00	38,000.00	38,000.00	48,000.00
	SECURITY GUARD/FIRE GUARD (FOR 3 BLDGS)	1	LS	20,000.00	20,000.00	20,000.00	20,000.00	40,000.00
	<b>Subtotal</b>				30,000.00		58,000.00	88,000.00
013223	PROJECT SURVEY AND LAYOUT (Included w/ General Conditions)							
017419	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL	1	LS	3,000.00	3,000.00	5,000.00	5,000.00	8,000.00
	DEBRIS DISPOSAL				3,000.00		5,000.00	8,000.00
	<b>Subtotal</b>							
<b>Div 2</b>	<b>SITE WORK &amp; DEMOLITION</b>							
024119	SELECTIVE DEMOLITION	4	LOC	50.00	200.00	350.00	1,400.00	1,600.00
	CUT OPENINGS IN FLOOR SLABS FOR NEW DUCTS	20	SF	20.00	400.00	60.00	1,200.00	1,600.00
	CUT OPENINGS IN FLOOR SLABS FOR UTILITIES 78" X 18"	220	SF	3.00	660.00	14.00	3,080.00	3,740.00
	REMOVE CONCRETE PADS	1	EA	150.00	150.00	900.00	900.00	1,050.00
	REMOVE EXISTING WINDOW	2	LOC	100.00	200.00	950.00	1,900.00	2,100.00
	REMOVE MASONRY FOR NEW LOUVER	48	LF	5.00	490.00	50.00	4,900.00	5,390.00
	SAW CUT CONCRETE SLAB FOR NEW FOUNDATION	3	LOC	100.00	300.00	500.00	1,500.00	1,800.00
	SAW CUT CONCRETE SLAB OPNG @ ROOF	1	LS	1,500.00	1,500.00	4,000.00	4,000.00	5,500.00
	TEMPORARY PROTECTION							
	<b>Subtotal</b>				3,400.00		18,980.00	22,780.00





NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM  
CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

Bidder:

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
Div 3	CONCRETE							
033000	CAST-IN-PLACE CONCRETE							
	CONCRETE REINFORCED 12" X 20" FOOTINGS	6	CY	400.00	2400.00	800.00	4800.00	7200.00
	CONCRETE REINFORCED 12" SLAB/FOOTING @ AREAWAY	8	CY	450.00	3600.00	900.00	7200.00	10800.00
	CONCRETE REINFORCED 12" RETAINING WALL @ AREAWAY	12	CY	600.00	7200.00	1200.00	14400.00	21600.00
	MISCELLANEOUS CONC. PATCHING / FLASH PATCH SLAB @ BASEMENT	938	SF	12.00	11,256.00	12.00	11,256.00	22,512.00
	CONCRETE SILL @ WINDOW	12	LF	50.00	600.00	25.00	300.00	900.00
	4" CONCRETE REINFORCED EQUIPMENT PADS	154	SF	12.00	1848.00	20.00	3080.00	4928.00
	6" CONCRETE REINFORCED EQUIPMENT PADS	214	SF	12.00	2568.00	22.00	4708.00	7276.00
	CONCRETE INFILL AT STEEL CHANNELS	15	LF	13.00	195.00	24.00	360.00	555.00
	CLOSE AND FILL WALL OPNG	1	LOC	300.00	300.00	500.00	500.00	800.00
	CONCRETE ENCASUREMENT AT ROOF AFTER NEW FRAMING INSTALLATION	56	LF	20.00	1120.00	45.00	2520.00	3640.00
	CONCRETE CURBS IN MECHANICAL ROOMS	1	LS	2500.00	2500.00	3500.00	3500.00	6000.00
	MISCELLANEOUS CONC. PATCHING / FLASH PATCH SLAB AS REQ'D	1	LS	1500.00	1500.00	2000.00	2000.00	3500.00
	MISCELLANEOUS EXIST. CONC. FLOOR PATCHING	1	LS	2000.00	2000.00	3000.00	3000.00	5000.00
	Subtotal				37,087.00		57,624.00	94,711.00
Div 4	MASONRY							
042200	CONCRETE UNIT MASONRY							
	8" CM 2 HR. RATED PARTITIONS	598	SF	12.00	7176.00	18.00	10,764.00	17,940.00
	8" CM 3 HR. RATED PARTITIONS	498	SF	14.00	6972.00	18.00	8964.00	15,936.00
	8" CMU 3 HR. RATED DUCT ENCLOSURE	250	SF	14.00	3500.00	18.00	4500.00	8000.00
	PATCH AROUND EXISTING LOUVER	1	LOC	300.00	300.00	700.00	700.00	1000.00
	MISCELLANEOUS PATCHING DUE TO DEMOLITION / MEP WORK	1	LS	2000.00	2000.00	4000.00	4000.00	6000.00
	Subtotal				19,948.00		28,928.00	48,876.00







NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Island  
Installation of New Central Boiler Plant and Fuel Tanks for Wards

Location: Wards Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at

Bidder:

DDC ID: HH112WB1R  
Sponsor Agency: Dept of Homeless Services

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
<b>Div 5</b>	<b>METALS</b>							
<b>051200</b>	<b>STRUCTURAL STEEL</b>							
	STEEL LINTELS FOR DOORS AND LOUVER.	34	LF	26.00	884.00	24.00	816.00	1700.00
	METAL CHANNEL 2-C8 X 11.5 SUPPRT @ NEW OPNG	424	LBS	2.00	1848.00	3.00	2772.00	4620.00
	STEEL LADDER - 4' H.	1	EA	1200.00	1200.00	1000.00	1000.00	2200.00
	STEEL LANDING AT LADDER	23	SF	34.00	782.00	55.00	1265.00	2047.00
	10" STEEL CURB AT FLUE	9	LF	27.00	243.00	60.00	540.00	783.00
	BRACE TOP OF CMU WALL (ANGLE 3 1/2" X 3 1/2" X 3/8")	910	LBS	2.00	1820.00	3.00	2730.00	4550.00
	STEEL GRATING @ AREAWAY	142	SF	28.00	3976.00	20.00	2840.00	6816.00
	STEEL LOUVER	25	SF	37.00	925.00	30.00	750.00	1675.00
	14" PIPE @ FLUE	36	LF	180.00	6480.00	55.00	1980.00	8460.00
	MISC IRON	1	LS	1000.00	1000.00	1500.00	1500.00	2500.00
	Subtotal				19,158.00		16,193.00	35,351.00
<b>Div 7</b>	<b>THERMAL &amp; MOISTURE PROTECTION</b>							
<b>071326</b>	<b>SELF-ADHERING SHEET WATERPROOFING</b>							
	ROUGH CARPENTRY	1	LS	1200.00	1200.00	1700.00	1700.00	2900.00
	PATCH AND REPAIR ROOF	142	SF	12.00	1704.00	15.00	2130.00	3834.00
	FLASHING AT FLUE	10	LF	13.00	130.00	30.00	300.00	430.00
	Subtotal				3034.00		4130.00	7164.00
<b>078413</b>	<b>FIRESTOPPING</b>							
	FIRESTOPPING	1/2	LF	2.00	224.00	4.50	504.00	728.00
	PIPE, DUCT PENETRATIONS	4	LOC	500.00	2000.00	1000.00	4000.00	6000.00
	Subtotal				2224.00		4504.00	6728.00





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CONTRACTORS BID BREAKDOWN FORM  
CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

Bidder:

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
078446	FIRE-RESISTIVE JOINT SYSTEMS	1	LS	750.00	750.00	650.00	650.00	1400.00
	FIRE-RESISTIVE JOINT SYSTEMS				750.00		650.00	1400.00
	Subtotal							
079200	JOINT SEALANTS (Included w/ 078446)							
	OPENINGS							
DIV 8	HOLLOW METAL DOORS (Included w/ 081213)							
081113	HOLLOW METAL DOORS (Included w/ 081213)							
	HOLLOW METAL FRAMES							
081213	DOOR AND FRAMES							
	METAL DOOR/ FRAME/ - SINGLE 36"X96"	1	EA	800.00	800.00	450.00	450.00	1250.00
	METAL DOOR/ FRAME/ - DOUBLE 72"X96" - 3 HR RATED	1	PR	2500.00	2500.00	700.00	700.00	3200.00
	ALUMINUM WINDOW	52	SF	70.00	3640.00	35.00	1820.00	5460.00
	Subtotal				6940.00		2970.00	9910.00
	DOOR HARDWARE							
087000	HARDWARE - FOR HM DOOR - SINGLE	1	EA	550.00	550.00	160.00	160.00	710.00
	HARDWARE - FOR HM DOOR - DOUBLE	1	PR	1000.00	1000.00	320.00	320.00	1320.00
	Subtotal				1550.00		480.00	2030.00
092900	GYPSUM DRYWALL							
	FINISHES							
	(2 LAYERS) 5/8" GWB ONE SIDE + (1) LAYER GYPSUM	52	SF	10.00	520.00	15.00	780.00	1300.00
	COREBOARD ON 2 1/2" M.S + SOUND BLANKET - 2 HOUR RATED							
	CEILING	438	SF	2.00	876.00	4.00	1752.00	2628.00
	PATCHING AND PAINTING CEILING							





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Project: Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island  
Bidder:

DDC ID: HH112WBLLR  
Sponsor Agency: Dept of Homeless Services

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
	<b>PAINTING</b>							
	PAINT CONCRETE WALLS	2432	SF	1.00	2432.00	1.00	2432.00	4864.00
	PATCH AND PAINT EXISTING CONCRETE WALLS	655	SF	1.50	2947.50	2.00	1310.00	4257.50
	NEW EXTERIOR AREAWAY WALL FINISH	200	SF	9.00	1800.00	14.00	2800.00	4600.00
	PAINT DOORS/ FRAMES	3	LVS	32.00	96.00	100.00	300.00	396.00
	Subtotal				4671.50		11,314.00	21,045.50
096724	RESINOUS FLOORING							
	MONOLITHIC DEXOTEX	438	SF	6.00	5628.00	8.00	7504.00	13,132.00
	Subtotal				5628.00		7504.00	13,132.00
Div 21	<b>FIRE SUPPRESSION</b>							
210500	<b>COMMON WORK RESULTS FOR FIRE PROTECTION</b>							
	DISCONNECT & REMOVE EX. SPRINKLER HEAD & PIPE CAP	12	EA	20.00	240.00	65.00	780.00	1020.00
	DESIGN CALCULATIONS & ENGINEERING	1	LS	200.00	200.00	800.00	800.00	1000.00
	SYSTEM DRAIN DOWN AND FILL	1	LS	100.00	100.00	400.00	400.00	500.00
	SYSTEM ID, LABELS, AND COLOR CODING	1	LS	50.00	50.00	150.00	150.00	200.00
	CLEAN, FLUSH, AND TEST	1	LS	500.00	500.00	1500.00	1500.00	2000.00
	Subtotal				1090.00		3630.00	4720.00
210529	<b>HANGERS AND SUPPORTS</b>							
	SEISMIC RESTRAINTS/ PIPING SUPPORTS	1	LS	450.00	450.00	650.00	650.00	1100.00
	Subtotal				450.00		650.00	1100.00
211313	<b>WET-PIPE SPRINKLER SYSTEMS</b>							
	SPRINKLER HEAD	13	EA	70.00	910.00	90.00	1170.00	2080.00
	1" DIA SCH-40	46	LF	15.00	690.00	30.00	1380.00	2070.00
	TIE-IN	12	EA	80.00	960.00	250.00	3000.00	3960.00
	Subtotal				2560.00		5550.00	8100.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Island

Project: Clark Thomas Building, HELP SEC Building, & Keener Building at  
Wards Island

Location: Wards Island

Bidder:

CONTRACTOR'S BID BREAKDOWN FORM  
CONTRACT 1 - General Construction

DDC ID: HH112WBLR  
Sponsor Agency: Dept of Homeless Services

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
Div 22	<b>PLUMBING</b>							
220500	<b>COMMON WORK RESULTS FOR PLUMBING</b>							
	PLUMBING DEMOLITION EX. WATER SERVICE	1	LS	800.00	800.00	1500.00	1500.00	2300.00
	CUTTING, PATCHING, CORING, AND FIRE STOP	1	LS	200.00	200.00	800.00	800.00	1000.00
	FLOOR SAW CUT, EXCAVATE, BACKFILL	32	LF	30.00	960.00	60.00	1920.00	2880.00
	CLEAN, FLUSH AND TEST	1	LS	300.00	300.00	1000.00	1000.00	1300.00
	NATURAL GAS FOR BOILER PIPE, VALVES CONNECTION TO EX. GAS	1	EA	8500.00	8500.00	9000.00	9000.00	17500.00
	Subtotal				10760.00		14220.00	24980.00
220543	HANGERS, SUPPORTS, ANCHORS, AND GUIDES	4	LOC	150.00	600.00	250.00	1000.00	1600.00
	Subtotal				600.00		1000.00	1600.00
220553	IDENTIFICATION PIPE ID/VALVE TAGS	1	LS	75.00	75.00	125.00	125.00	200.00
	Subtotal				75.00		125.00	200.00
221116	Domestic Water Piping	21	LF	100.00	2100.00	50.00	1050.00	3150.00
	4" DIA	10	LF	30.00	300.00	30.00	300.00	600.00
	2" DIA	10	LF	10.00	100.00	15.00	150.00	250.00
	3/4" DIA	1	EA	80.00	80.00	90.00	90.00	170.00
	3/4" DIA HOSE BIB	3	LOC	200.00	600.00	210.00	630.00	1230.00
	CONNECT TO EX. WATER PIPE	42	LF	5.00	210.00	10.00	420.00	630.00
	INSULATION	1	EA	850.00	850.00	275.00	275.00	1125.00
	NEPTUNE STRAINER - 4" DIA	2	EA	1400.00	2800.00	700.00	1400.00	4200.00
	METER INLET CONTROL VALVE - 4" DIA	1	LS	500.00	500.00	250.00	250.00	750.00
	RPZ-2"							





**BIDDER'S IDENTIFICATION OF SUBCONTRACTORS**

Project ID: HH112WBLR

**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:**

ZONE PLUMBING & HEATING  
(Print Name)

Agreed Amount To Be Paid To Subcontractor: \$ 205,000.00

2. **HVAC CONTRACTOR:**

GEORGE MECHANICAL CORP.  
(Print Name)

Agreed Amount To Be Paid To Subcontractor: \$ 235,000.00

3. **ELECTRICAL CONTRACTOR:**

A & D ELECTRIC CORP.  
(Print Name)

Agreed Amount To Be Paid To Subcontractor: \$ 210,000.00

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

Name of Bidder: BAE INDUSTRIES INC

By: *[Signature]*  
Signature of Partner or Corporate Officer

Print Name: PANKAS KUMAR

Title: PRESIDENT





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

CONTRACT FOR SIBLIERA DOWNFORM

CONTRACT 1 - General Construction

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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
	INCOMING WATER SERVICE 4" DIA (CLEAN, TEST & REINSTALL)	1	LS	1100.00	1100.00	1700.00	1700.00	2800.00
	Subtotal				3640.00		6285.00	14925.00
221316	SANITARY, VENT, AND STORM DRAINAGE PIPING	42	LF	30.00	1260.00	40.00	1680.00	2940.00
	4" DIA (UNDERGROUND)	50	LF	15.00	750.00	20.00	1000.00	1750.00
	2" DIA	2	EA	360.00	720.00	350.00	700.00	1420.00
	FLOOR DRAIN	2	EA	150.00	300.00	250.00	500.00	800.00
	CODP	1	EA	100.00	100.00	175.00	175.00	275.00
	3" VENT INLET W/ BIRD SCREEN	1	LOC	200.00	200.00	225.00	225.00	425.00
	CONNECT TO EX. SAN PIPE				3330.00		4280.00	7610.00
	Subtotal							
Div 23	HEATING, VENTILATING AND AIR CONDITIONING							
230500	COMMON WORK RESULTS FOR HVAC							
	REMOVE EXISTING STORAGE TANK W/ ASSOC. PIPING	2	EA	1500.00	3000.00	2000.00	18000.00	21000.00
	REMOVE EXISTING PROPELLER FAN AT WALL	1	EA	100.00	100.00	400.00	400.00	500.00
	REMOVE EXISTING 3" MED. PRESSURE INCOMING STEAM SERVICE	1	LS	1000.00	1000.00	8000.00	8000.00	9000.00
	REMOVE EXISTING PRV STATION (PRV-1) AND STEAM METER	1	LS	400.00	400.00	2000.00	2000.00	2400.00
	REMOVE EXISTING PRV (PRV-0) STATION W/ ASSOC. PIPING	1	LS	500.00	500.00	4000.00	4000.00	4500.00
	REMOVE EXISTING STEAM HEADER W/ ASSOC. PIPING	1	LS	500.00	500.00	2500.00	2500.00	3000.00
	REMOVE EXISTING PIPE	154	LF	5.00	770.00	25.00	3850.00	4620.00
	SEAL WALL PENETRATION	1	LS	100.00	100.00	100.00	100.00	1200.00
	MISC. DEMOLITION	1	LS	1500.00	1500.00	9000.00	9000.00	10500.00
	CUTTING, PATCHING & FIRE STOPPING	1	LS	200.00	200.00	100.00	100.00	1300.00
	PENETRATION	1	LS	200.00	200.00	100.00	100.00	1300.00
	SLEEVES	1	LS	100.00	100.00	500.00	500.00	600.00
	WELDING REQUIREMENTS	1	LS	200.00	200.00	1200.00	1200.00	1400.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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
	TEMPORARY BOILER	5	MOS	2500.00	12500.00	5000.00	25000.00	72,500.00
	EQUIPMENT SHIPPING/RIGGING/HANDLING	1	LS	10,000.00	10,000.00	6000.00	6000.00	16,000.00
	SYSTEM ID/VALVE TAGS	1	LS	200.00	200.00	400.00	400.00	600.00
	SYSTEM START-UP	1	LS	600.00	600.00	200.00	200.00	800.00
	TEMPORARY HEAT	1	LS	7000.00	7000.00	8000.00	8000.00	15,000.00
	Subtotal				65,300.00		39,600.00	104,900.00
230513	COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT (Included w/ 232123)							
230548	FOUNDATIONS, VIBRATION ISOLATION, & SUPPORTS FOR RIGIDLY SUPPORTED EQUIPMENT (SEISMIC DESIGN)	1	LS	1100.00	1100.00	1600.00	1600.00	2700.00
	MISC. DUCT, PIPE AND EQUIPMENT SUPPORT	1	LS	600.00	600.00	800.00	800.00	1400.00
	VIBRATION ISOLATION				1700.00		2400.00	4100.00
	Subtotal							
230593	TESTING, BALANCING AND ADJUSTING CLEAN, FLUSH AND TEST (PIPING)	1	LS	400.00	400.00	1200.00	1200.00	1600.00
	Subtotal				400.00		1200.00	1600.00
230700	HVAC INSULATION	442	SF	2.00	884.00	3.00	1326.00	2210.00
	DUCT INSULATION							
	PIPE INSULATION	62	LF	15.00	930.00	18.00	1116.00	2046.00
	4" - 6" DIA				1050.00	8.00	2112.00	3168.00
	1 1/4" DIA - 3" DIA	264	LF	4.00	1056.00		4554.00	7424.00
	Subtotal				2870.00			





NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

DDC ID: HH112WBRLR  
Sponsor Agency: Dept of Homeless Services

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
230900	HVAC INSTRUMENTATION AND CONTROLS	1	LS	50,000.00	50,000.00	55,000.00	55,000.00	105,000.00
	HVAC INSTRUMENTATION AND CONTROLS TO INCLUDE THE FOLLOWING:							
	STEAM BOILER (B-1, B-2)							
	TRIPLE BOILER FEED SET							
	FUEL OIL CONTROL SYSTEM							
	EXHAUST FAN							
	BLOW OFF TANK							
	CHEMICAL TREATMENT SYSTEM							
	PACKAGE WATER SOFTNER							
	ELECTRIC UNIT HEATER							
	MOTORIZED DAMPER							
	MISC. SYSTEM REQUIREMENTS							
	Subtotal				50,000.00		55,000.00	105,000.00
230910	SPECIAL MECHANICAL SYSTEMS							
	EF-R-1 - 1200 CFM	1	EA	1780.00	1780.00	1100.00	1100.00	2880.00
	EF-B-1 - 1200 CFM	1	EA	1950.00	1950.00	1000.00	1000.00	2950.00
	EF-B-2 - 800 CFM	1	EA	1000.00	1000.00	1000.00	1000.00	2000.00
	ELECTRIC UNIT HEATER (EUH-1) - 5KW	1	EA	1100.00	1100.00	450.00	450.00	1550.00
	ELECTRIC UNIT HEATER (EUH-2) - 3KW	1	EA	1000.00	1000.00	450.00	450.00	1450.00
	Subtotal				6830.00		4000.00	10830.00
230995	ENCLOSED CONTROLLERS (Included w/ 230900)							
231113	FUELOIL SYSTEM PIPING AND STORAGE TANKS							
	2" DIA FILL PIPE (OUTSIDE)	32	LF	55.00	1760.00	70.00	2240.00	4000.00
	2" DIA VENT PIPE/FILL PIPE	30	LF	30.00	900.00	40.00	1200.00	2100.00
	3/4" - 1" DIA FOS/ FOR (CARRIER)	148	LF	9.00	1332.00	20.00	2960.00	4292.00

INCLUDED IN  
L.S. ITEM ABOVE







NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at  
Wards Island

Bidder:

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: HH112WB/LR  
Sponsor Agency: Dept of Homeless Services

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	1 1/2" - 2" DIA FOS/ FOR (CONTAINMENT)	152	LF	28.00	4,256.00	60.00	9,120.00	13,376.00
	SPACERS FOR DBL WALL PIPING	1	LS	100.00	100.00	200.00	200.00	300.00
	STILL CONTAINER FILL BOX	1	EA	700.00	700.00	1,000.00	1,000.00	1,700.00
	MISC. EXCAVATION AND BACKFILL (OUTSIDE PIPE)	1	LS	1,150.00	1,150.00	2,700.00	2,700.00	3,850.00
	OIL TANK - 6000 GAL	1	EA	25,000.00	25,000.00	5,000.00	5,000.00	30,000.00
	FUEL OIL FILL	6000	GAL	5.00	30,000.00	0.50	3,000.00	33,000.00
	AUTO FUEL OIL FILTRATION SYSTEM	1	LS	5,000.00	5,000.00	1,200.00	1,200.00	6,200.00
	Subtotal				70,178.00		28,620.00	98,798.00
232113	HVAC PIPING							
	WATER FEED SYSTEM							
	2" VENT PIPE	76	LF	23.00	1,748.00	25.00	1,900.00	3,648.00
	1 1/4" - 1 1/2" DIA	82	LF	20.00	1,640.00	20.00	1,640.00	3,280.00
	1" DIA	44	LF	12.00	528.00	20.00	880.00	1,408.00
	1 1/2" DIA DRAIN	72	LF	20.00	1,440.00	28.00	2,016.00	3,456.00
	TIE-IN EXISTING WATER SYSTEM	1	LS	800.00	800.00	180.00	180.00	980.00
	VALVES & SPECIALTIES (PIPING SYSTEMS)	1	LS	11,000.00	11,000.00	16,000.00	16,000.00	27,000.00
	LPS/C (INDOOR)							
	6" DIA	6	LF	80.00	480.00	80.00	480.00	960.00
	5" DIA	42	LF	80.00	3,360.00	60.00	2,520.00	5,880.00
	4" DIA	16	LF	50.00	800.00	55.00	880.00	1,680.00
	3" DIA (TO DOMESTIC HOT WATER INLET)	30	LF	40.00	1,200.00	45.00	1,350.00	2,550.00
	1 1/4" DIA	36	LF	20.00	720.00	40.00	1,440.00	2,160.00
	TIE-IN EXISTING STEAM & CONDENSATE SYSTEM	1	LS	1,100.00	1,100.00	2,200.00	2,200.00	3,300.00
	CATHODIC PROTECTION	1	LS	1,600.00	1,600.00	2,100.00	2,100.00	3,700.00
	HOOK-UP EQUIPMENT:							
	STEAM BOILER (B-1, B-2)	2	EA	4,000.00	8,000.00	6,200.00	12,400.00	20,400.00
	TRIPLE BOILER FEED SET (BFP-1) - 60 GAL TANK W/ PUMP	1	PKG	1,100.00	1,100.00	2,500.00	2,500.00	3,600.00
	DUPEX FUEL OIL PUMP SET	1	SET	500.00	500.00	1,100.00	1,100.00	1,600.00
	AUTO FUEL OIL FILTRATION SYSTEM	1	LS	200.00	200.00	650.00	650.00	850.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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
	EXHAUST FAN (EF-B-1, EF-F-2)	2	EA	200.00	400.00	500.00	1000.00	1400.00
	OIL TANK - 6000 GAL	1	EA	700.00	700.00	9500.00	2500.00	3200.00
	BLOW DOWN TANK	1	EA	180.00	180.00	700.00	700.00	880.00
	CHEMICAL TREATMENT SYSTEM	1	LS	180.00	180.00	700.00	700.00	880.00
	PACKAGE WATER SOFTER	1	PKG	170.00	170.00	600.00	600.00	770.00
	MISC. HOOK-UPS REQUIREMENTS	1	SET	100.00	100.00	2200.00	2200.00	3200.00
	Subtotal				38,946.00		57,936.00	96,882.00
232123	HVAC PUMPS							
	TRIPLE BOILER FEED SET (BFP-1) - 60 GAL TANK W/ PUMP	1	EA	7000.00	7000.00	3000.00	3000.00	10,000.00
	DUPLEX FUEL OIL PUMP SET	1	EA	9200.00	9200.00	9800.00	2800.00	12,000.00
	Subtotal				16,200.00		5800.00	22,000.00
232500	CHEMICAL WATER TREATMENT							
	CHEMICAL TREATMENT SYSTEM	1	SYST	3000.00	3000.00	1200.00	1200.00	4200.00
	PACKAGE WATER SOFTER	1	PKG	2800.00	2800.00	800.00	800.00	3600.00
	BLOW DOWN TANK	1	EA	6000.00	6000.00	2200.00	2200.00	8200.00
	Subtotal				11,800.00		4200.00	16,000.00
233113	METAL DUCTWORK							
	GALVANIZED STEEL DUCT	910	LBS	4.00	3640.00	8.00	7280.00	10,920.00
	PLENUM W/ INSULATION	1	LS	1100.00	1100.00	1800.00	1800.00	2900.00
	GOOSENECK	1	EA	180.00	180.00	250.00	250.00	430.00
	WMS	26	SF	25.00	650.00	60.00	1560.00	2210.00
	LOUVER	26	SF	35.00	910.00	70.00	1820.00	2730.00
	STAINLESS DRIP PAN AT BOILER BURNER	2	EA	600.00	1200.00	1100.00	2200.00	3400.00
	ACOUSTICAL LINING	1	LS	1200.00	1200.00	1600.00	1600.00	2800.00
	Subtotal				8880.00		16,310.00	25,190.00





NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTORS BIDDER KNOWLEDGE

CONTRACT 1 - General Construction

Project: Island

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

DDC ID: HH112WBRLR

Sponsor Agency: Dept of Homeless Services

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
233313	DAMPERS							
	MOTORIZED DAMPER	5	EA	300.00	1500.00	200.00	1000.00	2500.00
	Subtotal				1500.00		1000.00	2500.00
235100	BRECHINGS, CHIMNEYS AND STACKS							
	PRE-FABRICATE BOILER FLUE 14" DIA INNER / 18" DIA OUTER	42	LF	120.00	5040.00	55.00	2310.00	7350.00
	10" DIA	32	LF	100.00	3200.00	50.00	1600.00	4800.00
	FLUE CLEAN OUT - 14" DIA	3	EA	700.00	2100.00	450.00	1350.00	3450.00
	Subtotal				10,340.00		5260.00	15,600.00
235200	HEAT GENERATION							
	STEAM BOILER (B-1, B-2) - 36 BHP, 1200 MBH	2	EA	30,000.00	60,000.00	5000.00	10,000.00	70,000.00
	Subtotal				60,000.00		10,000.00	70,000.00
Div 26	ELECTRICAL SYSTEMS							
260500	COMMON WORK RESULTS FOR ELECTRICAL							
	TEMPORARY ELECTRIC	1	LS	1800.00	1800.00	1200.00	1200.00	3000.00
	DEMOLITION - DISCONNECT AND REMOVE	1	LS	600.00	600.00	2400.00	2400.00	3000.00
	BREAKGLASS	1	EA	500.00	500.00	800.00	800.00	1300.00
	BOILER CONTROL PANEL	2	EA	400.00	800.00	450.00	900.00	1700.00
	BOILER FEED PUMPS	1	EA	30.00	30.00	310.00	310.00	340.00
	BOILERS	2	EA	45.00	90.00	320.00	640.00	730.00
	FUEL OIL PUMPS	1	EA	45.00	45.00	315.00	315.00	360.00
	ELECTRIC UNIT HEATERS (F.B.O)	2	EA	50.00	100.00	310.00	620.00	720.00
	EXHAUST FAN	3	EA	50.00	150.00	300.00	900.00	1050.00
	Subtotal				4115.00		8085.00	12,200.00





NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTORS BIDDER ACKNOWLEDGMENT  
CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island  
Bidder: \_\_\_\_\_

DDC ID: HH112WBLR  
Sponsor Agency: Dept of Homeless Services

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	CONDUCTORS AND CABLES							
	10 AWG (MECHANICAL)	2790	LF	0.50	1395.00	2.00	5580.00	6975.00
	12 AWG (BRANCH CIRCUIT WIRING)	1572	LF	0.40	628.80	2.00	3144.00	3772.80
	12 AWG (LIGHTING)	648	LF	0.45	291.60	2.50	1620.00	1911.60
	12 AWG (FIRE ALARM)	4392	LF	0.60	2635.20	2.40	10540.80	13176.00
	Subtotal				4950.60		20884.80	25835.40
260526	GROUNDING AND BONDING (Included w/ 260519)							
260529	SUPPORTING DEVICES (Included w/ 260533)							
260533	RACEWAYS AND BOXES							
	1 1/4" GRC (FEEDERS)	82	LF	70.00	8220.00	20.00	1640.00	2460.00
	3/4" GRC (LIGHTING)	218	LF	5.00	1090.00	15.00	3270.00	4360.00
	3/4" GRC (BRANCH CIRCUIT WIRING)	314	LF	6.00	1884.00	16.00	5024.00	6908.00
	3/4" GRC (MECHANICAL)	874	LF	6.25	5587.50	18.00	16082.00	21677.50
	3/4" GRC (FIRE ALARM)	2198	LF	5.75	12638.50	18.00	39564.00	52202.50
	Subtotal				22020.00		65590.00	87610.00
260548	SEISMIC CONTROLS FOR ELECTRICAL WORK (Included w/ 260533)							
260553	ELECTRICAL IDENTIFICATION (Included w/ 260500)							
260573	OVERCURRENT PROTECTION DEVICE COORDINATION (Included w/ 260500)							
260800	ELECTRICAL TESTING (Included w/ 260500)							







NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONFIRMATION OF BID BREAKDOWN UNIFORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

DDC ID: HH112WBRL  
Sponsor Agency: Dept of Homeless Services

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
260923	LIGHTING CONTROL DEVICES							
	SINGLE POLE LIGHTING SWITCH	4	EA	50.00	200.00	200.00	800.00	1000.00
	CEILING MOUNTED OCCUPANCY SENSOR	2	EA	200.00	400.00	300.00	600.00	1000.00
	Subtotal				600.00		1400.00	2000.00
262001	FEEDERS AND BRANCH CIRCUITRY							
	2 AWG (FEEDERS)	348	LF	2.00	696.00	5.00	1740.00	2436.00
	Subtotal				696.00		1740.00	2436.00
262416	PANELBOARDS							
	100 AMP PANELS	1	EA	3000.00	3000.00	1500.00	1500.00	4500.00
	Subtotal				3000.00		1500.00	4500.00
262726	WIRING DEVICES							
	DUPLEX REC	8	EA	20.00	160.00	115.00	920.00	1080.00
	Subtotal				160.00		920.00	1080.00
262802	SELECTION OF OVERCURRENT DEVICES (Included w/ 262416)							
	Subtotal							
262923	VARIABLE FREQUENCY CONTROLLERS (INSTALLATION OF)							
	VARIABLE FREQUENCY CONTROLLERS (INSTALLATION OF)	1	LS	300.00	300.00	300.00	300.00	3300.00
	Subtotal				300.00		300.00	3300.00
265100	LIGHTING							
	LIGHTING FIXTURE TYPE A	12	EA	120.00	1440.00	130.00	1560.00	3000.00
	LIGHTING EXITS	2	EA	240.00	480.00	140.00	280.00	760.00
	EMERGENCY LIGHTS	7	EA	150.00	1050.00	150.00	1050.00	2100.00
	Subtotal				2970.00		2890.00	5860.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BIDDER APPROVAL FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

DDC ID: HH112WBLR

Sponsor Agency: Dept of Homeless Services

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
266003	FIRE PROTECTIVE ALARM SYSTEM							
	TIE INTO EXISTING SYSTEM	1	LS	120.00	120.00	300.00	300.00	420.00
	DATA LOGGER 4X ENCLOSURE	1	EA	700.00	700.00	320.00	320.00	1020.00
	8 RELAY MODULE	1	EA	400.00	400.00	200.00	200.00	600.00
	STROBE LIGHTS	2	EA	350.00	700.00	140.00	280.00	980.00
	HORN / STROB UNITS	16	EA	450.00	7200.00	140.00	2240.00	9440.00
	SMOKE DETECTOR	1	EA	300.00	300.00	150.00	150.00	450.00
	HEAT DETECTOR	1	EA	300.00	300.00	160.00	160.00	460.00
	PULL STATIONS	2	EA	200.00	400.00	160.00	320.00	720.00
	PROGRAMMING / ENGINEERING FEES	1	LS	1000.00	1000.00	4000.00	4000.00	5000.00
	Subtotal				11,120.00		7970.00	19,090.00
266004	CARBON MONOXIDE GAS DETECTION SYSTEM							
	CO DETECTORS	48	EA	250.00	12,000.00	150.00	7200.00	19,200.00
	Subtotal				12,000.00		7200.00	19,200.00
DIV 31	EARTHWORK							
310000	EARTHWORK							
	TRENCH EXCAVATION FORAREAWAY AND FOOTING	144	CY	50.00	7200.00	200.00	28,800.00	36,000.00
	TRENCH EXCAVATION & BACKFILL FOR SEWER	3	CY	50.00	150.00	200.00	600.00	750.00
	BACKFILL	278	CY	20.00	5560.00	60.00	16,680.00	22,240.00
	HAUL	32	CY	15.00	480.00	30.00	960.00	1440.00
	Subtotal				13,370.00		47,010.00	60,380.00
311100	SITE CLEARING, REMOVALS AND PREPARATION							
	SITE CLEARING, REMOVALS AND PREPARATION	1	LS	4000.00	4000.00	12,000.00	12,000.00	16,000.00
	Subtotal				4000.00		12,000.00	16,000.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

CONTRACTOR'S BIDDER TAKE-DOWN FORM

CONTRACT 1 - General Construction

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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
DIV 33	UTILITIES							
330200	PROTECTION OF EXISTING UTILITIES	1	LS	1,500.00	1,500.00	1,500.00	1,500.00	3,000.00
	PROTECTION OF EXISTING UTILITIES							
	Subtotal				1,500.00		1,500.00	3,000.00
334113	STORM SEWER SYSTEMS							
	8" DIA - DIP	32	LF	50.00	1,600.00	100.00	3,200.00	4,800.00
	PIPE BEDDING	3	CY	50.00	150.00	100.00	300.00	450.00
	Subtotal				1,750.00		3,500.00	5,250.00
334900	STORM STRUCTURES							
	SANITARY MANHOLE - 4' DIA	1	LOC	4,000.00	4,000.00	4,000.00	4,000.00	8,000.00
	AREA DRAIN	1	LOC	700.00	700.00	1,300.00	1,300.00	2,000.00
	Subtotal				4,700.00		5,300.00	10,000.00
<b>SUB-TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK</b>								
<b>(CLARK THOMAS BUILDING)</b>					611,201.10		731,106.80	1,342,307.90





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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 (HELP SEC BUILDING)							
Div 1	GENERAL REQUIREMENTS							
010000	MOBILIZATION	1	LS	22000.00	22000.00	60.00	60,000.00	82,000.00
	Subtotal				22000.00		60,000.00	82,000.00
013223	PROJECT SURVEY AND LAYOUT (Included w/ General Conditions)							
017419	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL	1	LS	2000.00	2000.00	5000.00	5000.00	7000.00
	Subtotal				2000.00		5000.00	7000.00
Div 2	SITE WORK & DEMOLITION							
024119	SELECTIVE DEMOLITION							
	TEMPORARY PROTECTION (MANHOLES, GENERATOR, TREES)	1	LS	3000.00	3000.00	9000.00	9000.00	12,000.00
	REMOVE AND RELOCATE LIGHT POLE	1	EA	300.00	300.00	1600.00	1600.00	1900.00
	REMOVE CHAIN LINK FENCE	62	LF	3.00	186.00	14.00	868.00	1054.00
	REMOVE GRASS	2024	SF	3.00	6072.00	2.50	5060.00	11,132.00
	REMOVE PAVEMENT	4215	SF	1.50	6322.50	4.00	16,860.00	23,182.50
	REMOVE CONCRETE CURB	145	LF	2.00	290.00	11.00	1595.00	1885.00
	REMOVE MANHOLE	1	EA	300.00	300.00	1300.00	1300.00	1600.00
	MISC. DEMOLITION WORK	1	LS	1000.00	1000.00	4500.00	4500.00	5500.00
	Subtotal				17,470.50		40,783.00	58,253.50







NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Island  
Installation of New Central Boiler Plant and Fuel Tanks for Wards

Location: Wards Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at

Bidder: \_\_\_\_\_

DDC ID: HH112WBLR  
Sponsor Agency: Dept of Homeless Services

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
Div 3	CONCRETE							
033000	CAST-IN-PLACE CONCRETE							
	CONCRETE 24" X 54" CONT. PERIMETER FOOTINGS @ PRE-FABRICATED BUILDING	62	CY	350.00	21,700.00	600.00	37,200.00	58,900.00
	8" CONCRETE REINFORCED SLAB ON GRADE	1440	SF	6.00	8640.00	8.00	11,520.00	20,160.00
	6" CRASHED STONE SUBBASE	26	CY	32.00	832.00	16.00	416.00	1248.00
	VAPOR BARRIER	1440	SF	1.00	1440.00	2.00	2880.00	4320.00
	7" FLOOR LEVELING	1440	SF	1.50	2160.00	2.00	2880.00	5040.00
	PERIMETER SOG THICKENING	7	CY	300.00	2100.00	340.00	2380.00	4480.00
	CONCRETE REINFORCED SEPARATE FOOTINGS	7	CY	340.00	2380.00	600.00	4200.00	6580.00
	CONCRETE REINFORCED PIERS	3	CY	360.00	1080.00	650.00	1950.00	3030.00
	CONCRETE REINFORCED PIT	5	CY	340.00	1700.00	600.00	3000.00	4700.00
	6" CONCRETE REINFORCED EQUIPMENT PADS	500	SF	13.00	6500.00	20.00	10,000.00	16,500.00
	Subtotal				48,532.00		76,426.00	124,958.00
034913	BOLLARDS							
	6" STEEL BOLLARDS W/EXCAVATION AND FOOTING	11	EA	450.00	4950.00	700.00	7700.00	12,650.00
	Subtotal				4950.00		7700.00	12,650.00
Div 5	METALS							
051200	STRUCTURAL STEEL							
	STEEL REINFORCEMENT AT SLAB OPNG	124	LBS	2.50	310.00	4.00	496.00	806.00
	MISC. STEEL	1	LS	900.00	900.00	1400.00	1400.00	2300.00
	Subtotal				1210.00		1896.00	3106.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

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Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder: \_\_\_\_\_  
DDC ID: HH112WBLR  
Sponsor Agency: Dept of Homeless Services

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
Div 7	<b>THERMAL &amp; MOISTURE PROTECTION</b>							
071326	SELF-ADHERING SHEET WATERPROOFING							
	ROUGH CARPENTRY	1	LS	3000.00	3000.00	3000.00	3000.00	6000.00
	FOUNDATION AND FOOTING WATERPROOFING	1210	SF	2.00	2420.00	3.00	3630.00	6050.00
	Subtotal				5420.00		6630.00	12,050.00
078446	<b>FIRE-RESISTIVE JOINT SYSTEMS</b>							
	FIRE-RESISTIVE JOINT SYSTEMS	1	LS	400.00	400.00	300.00	300.00	700.00
	Subtotal				400.00		300.00	700.00
092900	<b>GYP SUM DRYWALL FINISHES</b>							
	(3) LAYERS 5/8" GWB EACH SIDE IN 1 5/8 M.S. - NON RATED	384	SF	12.00	4608.00	15.00	5760.00	10,368.00
	MISC. FINISH WORK	1	LS	1200.00	1200.00	1600.00	1600.00	2800.00
	Subtotal				5808.00		7360.00	13,168.00
079200	<b>JOINT SEALANTS (Included w/ 078446)</b>							
Div 21	<b>FIRE SUPPRESSION</b>							
210500	<b>COMMON WORK RESULTS FOR FIRE PROTECTION</b>							
	DESIGN CALC'S / ENGINEERING	1	LS	300.00	300.00	400.00	400.00	700.00
	SYSTEM DRAIN DOWN AND FILL	1	LS	200.00	200.00	540.00	540.00	740.00
	SYSTEM I.D. LABELS AND COLOR CODING	1	LS	50.00	50.00	120.00	120.00	170.00
	CLEAN, FLUSH AND TEST	1	LS	300.00	300.00	1100.00	1100.00	1400.00
	Subtotal				850.00		2660.00	3510.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS SUPPLEMENTAL INFORMATION

CONTRACT 1 - General Construction

Project: Island  
Installation of New Central Boiler Plant and Fuel Tanks for Wards

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

DDC ID: HH112WB/LR  
Sponsor Agency: Dept of Homeless Services

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
210529	HANGERS AND SUPPORTS							
	SEISMIC RESTRAINTS / PIPING SUPPORTS	1	LS	400.00	400.00	500.00	500.00	900.00
	Subtotal				400.00		500.00	900.00
211313	WET-PIPE SPRINKLER SYSTEMS							
	SPRINKLER HEAD ( BOILER SHED)	15	EA	65.00	975.00	100.00	1500.00	2475.00
	2 1/2" DIA - 2" DIA	82	LF	30.00	2460.00	50.00	4100.00	6560.00
	1 1/4" DIA - 1" DIA (BOILER SHED)	126	LF	20.00	2520.00	30.00	3780.00	6300.00
	TIE-IN	1	LS	140.00	140.00	300.00	300.00	440.00
	2 1/2" OS&Y W/ TS & FS	1	LS	4000.00	4000.00	500.00	500.00	4500.00
	Subtotal				10,075.00		10,180.00	20,275.00
Div 22	PLUMBING							
220500	COMMON WORK RESULTS FOR PLUMBING							
	CLEAN, FLUSH & TEST	1	LS	1000.00	1000.00	1000.00	1000.00	2000.00
	Subtotal				1000.00		1000.00	2000.00
220543	HANGERS, SUPPORTS, ANCHORS, AND GUIDES (Included w/ 221116, 221316)							
	Subtotal							
220553	IDENTIFICATION							
	PIPE ID / VALVE TAGS	1	LS	150.00	150.00	200.00	200.00	350.00
	Subtotal				150.00		200.00	350.00
221116	Domestic Water Piping							
	DOMESTIC WATER							
	2" DIA	105	LF	30.00	3150.00	50.00	5250.00	8400.00
	2" DIA RPZ	1	EA	1500.00	1500.00	700.00	700.00	2200.00
	INSULATION	105	LF	5.00	525.00	12.00	1260.00	1785.00
	TIE-IN	1	LS	300.00	300.00	500.00	500.00	800.00
	Subtotal				5475.00		7710.00	13185.00





NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

DDC ID: HH112WBRL  
Sponsor Agency: Dept of Homeless Services

Bidder:

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
221316	SANITARY, VENT. AND STORM DRAINAGE PIPING	2	EA	600.00	1200.00	1400.00	2800.00	4000.00
	FLOOR DRAIN W/ ASSOCIATED PIPING		LS	700.00	700.00	2000.00	2000.00	2700.00
	TIE-IN	1			1400.00		4800.00	6700.00
	Subtotal							
DIV 23	HEATING, VENTILATING AND AIR CONDITIONING							
230500	COMMON WORK RESULTS FOR HVAC							
	CUTTING, PATCHING & FIRE STOPPING	1	LS	22000.00	22000.00	15000.00	15000.00	37000.00
	PENETRATION	1	LS	700.00	700.00	1100.00	1100.00	1800.00
	SLEEVES	1	LS	300.00	300.00	1200.00	1200.00	1500.00
	EQUIPMENT CURBS/ PADS	1	LS	400.00	400.00	600.00	600.00	1000.00
	WELDING REQUIREMENTS	1	LS	1500.00	1500.00	1500.00	1500.00	3000.00
	TEMPORARY BOILER	5	MOS	10000.00	50000.00	4000.00	20000.00	70000.00
	EQUIPMENT SHIPPING/ RIGGING / HANDLING	1	LS	15000.00	15000.00	17000.00	17000.00	32000.00
	SYSTEM ID / VALVE TAGS	1	LS	300.00	300.00	300.00	300.00	600.00
	SYSTEM START-UP	1	LS	3000.00	3000.00	3500.00	3500.00	6500.00
	TEMPORARY HEAT	1	LS	7000.00	7000.00	8000.00	8000.00	15000.00
	Subtotal				100,200.00		68,200.00	168,400.00
230613	COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT (Included w/ 232123)							
230548	FOUNDATIONS, VIBRATION ISOLATION, & SUPPORTS FOR RIGIDLY SUPPORTED EQUIPMENT (SEISMIC DESIGN)							
	MISC. DUCT, PIPE AND EQUIPMENT SUPPORT	1	LS	1200.00	1200.00	1800.00	1800.00	3000.00
	VIBRATION ISOLATION	1	LS	700.00	700.00	1000.00	1000.00	1700.00
	Subtotal				1900.00		2800.00	4700.00
230550	BASIC MECHANICAL MATERIALS AND METHODS PREFABRICATED MECHANICAL ROOM							
	Subtotal	1580	SF	140.00	300,200.00	160.00	252,800.00	553,000.00
	Subtotal				300,200.00		252,800.00	553,000.00

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NEW YORK CITY DEPARTMENT OF DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Island

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Location: Wards Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Bidder:

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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
230593	TESTING, BALANCING AND ADJUSTING CLEAN, FLUSH AND TEST (PIPING)	1	LS	500.00	500.00	3600.00	3600.00	4100.00
	Subtotal				500.00	3600.00	3600.00	4100.00
230700	HVAC INSULATION DUCT INSULATION (Included w/ other) RE-INSULATE EX. STEAM PIPE, HEATING HOT WATER, DOMESTIC HOT WATER, HEAT EXCHANGER, ETC) PIPE INSULATION	360 112	LF LF	12.00 15.00	4320.00 1680.00	28.00 25.00	10,080.00 2,800.00	14,400.00 4,480.00
	Subtotal				6000.00		12,880.00	18,880.00
230900	HVAC INSTRUMENTATION AND CONTROLS HVAC INSTRUMENTATION AND CONTROLS TO INCLUDE THE FOLLOWING: STEAM BOILER (B-1, B-2) TRIPLE BOILER FEED SET FUEL OIL CONTROL SYSTEM EXHAUST FAN (EF-D&C) BLOW OFF TANK CHEMICAL TREATMENT SYSTEM PACKAGE WATER SOFTER ELECTRIC UNIT HEATER (EUH-1, 2) - 5 KW MOTORIZED DAMPER MISC. SYSTEM REQUIREMENTS	1	LS	50,000.00	50,000.00	55,000.00	55,000.00	105,000.00
	Subtotal				50,000.00		55,000.00	105,000.00

INCLUDED IN LS  
MATERIALS  
ITEM ABOVE





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Wards Island

Bidder:

DDC ID: HH112WBRL

Sponsor Agency: Dept of Homeless Services

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
230910	<b>SPECIAL MECHANICAL SYSTEMS</b>							
	ELECTRIC UNIT HEATER (EUH-A) - 7.5KW	1	EA	1,300.00	1,300.00	400.00	400.00	1,700.00
	ELECTRIC UNIT HEATER (EUH-B) - 5 KW	1	EA	1,300.00	1,300.00	425.00	425.00	1,725.00
	EF-B - 1300 CFM,	1	EA	2,000.00	2,000.00	700.00	700.00	2,700.00
	EF-A - 2000 CFM,	1	EA	3,000.00	3,000.00	710.00	710.00	3,710.00
	Subtotal				7,600.00		2,235.00	9,835.00
230995	ENCLOSED CONTROLLERS (Included w/ 230900)							
231113	<b>FUELOIL SYSTEM PIPING AND STORAGE TANKS</b>							
	OIL PIPE, FILL BOX VENT. ETC., 2" DIA	152	LF	15.00	2,280.00	55.00	8,360.00	10,640.00
	FUEL VALVE SPECIALTIES, FILL BOX ETC...	1	EA	1,800.00	1,800.00	2,200.00	2,200.00	4,000.00
	OIL TANK - 7000 GAL	2	EA	30,000.00	60,000.00	6,000.00	12,000.00	72,000.00
	FUEL OIL FILL	6000	GAL	5.00	30,000.00	0.50	3,000.00	33,000.00
	FUEL OIL CONTAINMENT WELD STEEL 14 GAUGE (4'H X 11.5' W X 26'L)	2	EA	16,000.00	32,000.00	5,000.00	10,000.00	42,000.00
	AUTO FUEL OIL FILTRATION SYSTEM & ALARM CONTROL PANEL.ETC..	2	EA	4,000.00	8,000.00	1,000.00	2,000.00	10,000.00
	Subtotal				134,080.00		37,560.00	171,640.00
232113	<b>HVAC PIPING</b>							
	LPS/C PIPE							
	10" DIA (BURRIED)	222	LF	100.00	22,200.00	150.00	33,300.00	55,500.00
	6" DIA (BURRIED)	222	LF	45.00	9,990.00	80.00	17,760.00	27,750.00
	10" DIA (HEADER PIPE)	42	LF	100.00	4,200.00	140.00	5,880.00	10,080.00
	6" DIA	74	LF	50.00	3,700.00	70.00	5,180.00	8,880.00
	TIE-IN TO EXISTING STEAM & CONDENSATE SYSTEM	1	LS	12,000.00	12,000.00	2,200.00	2,200.00	3,400.00
	CATHODIC PROTECTION	1	LS	3,000.00	3,000.00	5,000.00	5,000.00	8,000.00
	MISC. VALVE & SPECIALTIES	1	LS	11,000.00	11,000.00	16,000.00	16,000.00	27,000.00
	HOOK-UP EQUIPMENT:							





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Installation of New Central Boiler Plant and Fuel Tanks for Wards

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: HH112WB1R

Project: Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island  
Bidder:

Sponsor Agency: Dept of Homeless Services

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
	STEAM BOILER (B-1, B-2)	2	EA	4000.00	8000.00	6500.00	13,000.00	21,000.00
	TRIPLE BOILER FEED SET (BFP-1) - 225 GAL TANK W/ PUMP	1	PKG	3000.00	3000.00	5000.00	5000.00	8,000.00
	CONDENSATE PUMP	2	SET	1200.00	2400.00	1600.00	3200.00	5,600.00
	DUPLEX FUEL OIL PUMP SET	1	SET	1200.00	1200.00	1600.00	1,600.00	2,800.00
	AUTO FUEL OIL FILTRATION SYSTEM - ALLOWANCE	1	LS	160.00	160.00	800.00	800.00	960.00
	EXHAUST FAN (EF-B-1, EF-F-2)	2	EA	160.00	320.00	600.00	1,200.00	1,520.00
	OIL TANK - 7000 GAL	2	EA	520.00	1040.00	2300.00	4,600.00	5,640.00
	BLOW OFF TANK	1	EA	160.00	160.00	700.00	700.00	860.00
	CHEMICAL TREATMENT SYSTEM	1	LS	175.00	175.00	700.00	700.00	875.00
	PACKAGE WATER SOFTNER	1	PKG	175.00	175.00	600.00	600.00	775.00
	MISC. HOOK-UPS REQUIREMENTS	1	SET	1200.00	1200.00	2200.00	2,200.00	3,400.00
	Subtotal				73,120.00		118,920.00	192,040.00
232123	HVAC PUMPS							
	TRIPLE BOILER FEED SET (BFP-1) - 225 GAL TANK W/ PUMP	1	EA	16000.00	16,000.00	4000.00	4,000.00	20,000.00
	DUPLEX FUEL OIL PUMP SET	1	EA	13000.00	13,000.00	4000.00	4,000.00	17,000.00
	DUPLEX CONDENSATE REMOVAL PUMP	1	SET	12000.00	12,000.00	4000.00	4,000.00	16,000.00
	CR1&2	2	EA	4000.00	8000.00	2000.00	4,000.00	12,000.00
	Subtotal				44,000.00		16,000.00	60,000.00
232500	CHEMICAL WATER TREATMENT							
	CHEMICAL TREATMENT SYSTEM	1	LS	3000.00	3000.00	1200.00	1,200.00	4,200.00
	PACKAGE WATER SOFTNER	1	PKG	2600.00	2600.00	800.00	800.00	3,400.00
	BLOW OFF TANK	1	EA	6000.00	6000.00	2100.00	2,100.00	8,100.00
	Subtotal				11,600.00		4,100.00	15,700.00
233113	METAL DUCTWORK							
	SHEETMETAL DUCKWORK	1	LS	16000.00	16,000.00	22,000.00	22,000.00	38,000.00
	GALVANIZED STEEL DUCT	310	LBS	5.00	1550.00	10.00	3100.00	4650.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder: \_\_\_\_\_

DDC ID: HH112WB/LR  
Sponsor Agency: Dept of Homeless Services

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
	PLENUM W/ INSULATION	2	EA	1100.00	2200.00	1600.00	3200.00	5400.00
	GOOSENECK	1	EA	170.00	170.00	240.00	240.00	410.00
	WMS	2.2	SF	30.00	66.00	60.00	132.00	198.00
	LOUVER	1.20	SF	40.00	48.00	70.00	84.00	132.00
	ACOUSTICAL LINING	1	LS	1100.00	1100.00	1600.00	1600.00	2700.00
	Subtotal				26,480.00		39,860.00	66,340.00
233313	DAMPERS							
	FIRE DAMPER	160	SF	250.00	25,000.00	175.00	17,500.00	42,500.00
	ALD	120	SF	220.00	26,400.00	175.00	21,000.00	47,400.00
	Subtotal				51,400.00		38,500.00	89,900.00
235100	BREECHINGS, CHIMNEYS AND STACKS							
	16" DIA FLUE	16	LF	150.00	2400.00	80.00	1280.00	3680.00
	12" DIA METER DRAFT W/ BAROMETRIC DAMPER	18	LF	100.00	1800.00	50.00	900.00	2700.00
	Subtotal				4200.00		2180.00	6380.00
235200	HEAT GENERATION							
	STEAM BOILER (B-1, B-2) - 119 BHP, 4000 MBH	2	EA	95,000.00	190,000.00	30,000.00	60,000.00	250,000.00
	Subtotal				190,000.00		60,000.00	250,000.00
DIV 26	ELECTRICAL SYSTEMS							
260500	COMMON WORK RESULTS FOR ELECTRICAL							
	Temporary Electric	1	LS	400.00	400.00	600.00	600.00	1000.00
	CUTTING & PATCHING	1	LS	500.00	500.00	500.00	500.00	1000.00
	EXCAVATION & BACKFILL	172	LF	46.00	7912.00	54.00	9288.00	17200.00
	Subtotal				8812.00		10,388.00	19,200.00







NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: HH112WB1LR

Sponsor Agency: Dept of Homeless Services

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	CONDUCTORS AND CABLES 12 AWG	810	LF	1.00	810.00	3.00	2430.00	3240.00
	Subtotal				810.00		2430.00	3240.00
260526	GROUNDING AND BONDING (Included w/ 260519)							
260529	SUPPORTING DEVICES (Included w/ 260533)							
260533	RACEWAYS AND BOXES 2" CONDUIT 3/4" CONDUIT	640 400	LF LF	6.00 5.00	3840.00 2000.00	30.00 20.00	19200.00 8000.00	23040.00 10000.00
	Subtotal				5840.00		27200.00	33040.00
260543	UNDERGROUND DUCTS AND UTILITY STRUCTURES 2" PVC	700	LF	2.00	1400.00	14.00	9800.00	11200.00
	Subtotal				1400.00		9800.00	11200.00
260548	SEISMIC CONTROLS FOR ELECTRICAL WORK (Included w/ 260533)							
260553	ELECTRICAL IDENTIFICATION (Included w/ 260500)							
260573	OVERCURRENT PROTECTION DEVICE COORDINATION (Included w/ 262416)							
260800	ELECTRICAL TESTING (Included w/ 260500)							





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACT FOR SIBD BREAKROOM IN FIRM  
CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

Sponsor Agency: Dept of Homeless Services

DDC ID: HH112WBLR

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
262001	FEEDERS AND BRANCH CIRCUITRY							
	2 AWG	1210	LF	3.00	3630.00	5.00	6050.00	9680.00
	8 AWG	420	LF	1.00	420.00	3.00	1260.00	1680.00
	Subtotal				4050.00		7310.00	11360.00
262416	PANELBOARDS							
	TERMINATE PANEL F.B.O.	1	EA	200.00	200.00	400.00	400.00	600.00
	Subtotal				200.00		400.00	600.00
262802	SELECTION OF OVERCURRENT DEVICES (Included w/ 262416)							
262813	FUSES (Included w/ 262416)							
262816	ENCLOSED SWITCHES AND CIRCUIT BREAKERS							
	100A NEMA 1 DISCONNECT	1	EA	800.00	800.00	800.00	800.00	1600.00
	TAP EXISTING BUS	1	LOC	700.00	700.00	1000.00	1000.00	1700.00
	Subtotal				1500.00		1800.00	3300.00
262923	VARIABLE FREQUENCY CONTROLLERS (INSTALLATION OF)							
	VARIABLE FREQUENCY CONTROLLERS (INSTALLATION OF)	1	LS	1000.00	1000.00	2000.00	3000.00	4000.00
	Subtotal				1000.00		3000.00	4000.00
266003	FIRE PROTECTIVE ALARM SYSTEM							
	TIE INTO EXISTING SYSTEM	1	LS	150.00	150.00	300.00	300.00	450.00
	PULL STATIONS	2	EA	200.00	400.00	200.00	400.00	800.00
	SMOKE DETECTORS	2	EA	300.00	600.00	200.00	400.00	1000.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

DDC ID: HH112WBLR  
Sponsor Agency: Dept of Homeless Services

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
	HEAT DETECTORS	2	EA	250.00	500.00	160.00	320.00	820.00
	TAMPER SWITCHES	1	EA	150.00	150.00	170.00	170.00	320.00
	FLOW SWITCHES	1	EA	150.00	150.00	160.00	160.00	310.00
	STROBE UNITS	2	EA	400.00	800.00	150.00	300.00	1100.00
	PROGRAMMING / ENGINEERING	1	LS	1000.00	1000.00	4000.00	4000.00	5000.00
	Subtotal				3750.00		6050.00	9800.00
DIV 31	EARTHWORK							
310000	EARTHWORK							
	TRENCH EXCAVATION FOR FOUNDATION WORK	355	CY	20.00	7100.00	60.00	21,300.00	28,400.00
	BACKFILL	275	CY	20.00	5500.00	50.00	13,750.00	19,250.00
	HAUL	84	CY	15.00	1260.00	60.00	5040.00	6300.00
	TRENCH EXCAVATION AND BACKFILL FOR ELEC. & MECH. CONDUIT	230	CY	40.00	9200.00	100.00	23,000.00	32,200.00
	TRENCH EXCAVATION & BACKFILL FOR SEWER	110	CY	40.00	4400.00	100.00	11,000.00	15,400.00
	Subtotal				27,460.00		74,090.00	101,550.00
312500	SOIL EROSION AND SEDIMENT CONTROL							
	TEMPORARY CONSTRUCTION ENTRANCE	610	SF	5.00	3050.00	7.00	4270.00	7320.00
	SILT FENCE	174	LF	2.00	348.00	3.00	522.00	870.00
	DEWATERING	1	LS	5000.00	5000.00	12,000.00	12,000.00	17000.00
	SOIL STOCKPILE	130	CY	10.00	1300.00	40.00	5200.00	6500.00
	Subtotal				9898.00		21,992.00	31,890.00
DIV 32	EXTERIOR IMPROVEMENTS							
320516	AGGREGATE MATERIALS (Included w/ 321216)							





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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
321216	ASPHATIC CONCRETE PAVING	2684	SF	4.00	10,736.00	6.00	16,104.00	26,840.00
	ASPHATIC CONCRETE PAVING				10,736.00		16,104.00	26,840.00
	Subtotal							
321600	CONCRETE CURB AND SIDEWALKS	248	SF	40.00	9920.00	50.00	12,400.00	22,320.00
	NEW RETAINING WALL	892	SF	6.00	5352.00	12.00	10,704.00	16,056.00
	7" CONCRETE PAVEMENT	45	LF	25.00	1125.00	65.00	2925.00	4050.00
	CONCRETE CURB				16,397.00		26,029.00	42,426.00
	Subtotal							
329000	LANDSCAPE PLANTING	1040	SF	5.00	5200.00	10.00	10,400.00	15,600.00
	GRASS / PLANTERS	1	LS	6500.00	6500.00	9500.00	9500.00	16,000.00
	MISC. LANDSCAPING				11,700.00		19,900.00	31,600.00
	Subtotal							
329200	LAWNS AND GRASSES (Included w/ 329000)							
DIV 33	UTILITIES							
330200	PROTECTION OF EXISTING UTILITIES	1	LS	3000.00	3000.00	2000.00	2000.00	5000.00
	PROTECTION OF EXISTING UTILITIES				3000.00		2000.00	5000.00
	Subtotal							
331116	WATER DISTRIBUTION SYSTEM	158	LF	15.00	2370.00	70.00	11,060.00	13,430.00
	WATER FEED SYSTEM - 2" DIA W/ INSULATION, ETC.	162	LF	40.00	6480.00	50.00	8100.00	14,580.00
	2 1/2" DIA FIRE PROTECTION W/ INSULATION (UD)	1	LOC	300.00	300.00	600.00	600.00	900.00
	TIE-IN EXISTING WATER SYSTEM	19	CY	60.00	1140.00	20.00	3800.00	4940.00
	PIPE BEDDING				10,290.00		23,560.00	33,850.00
	Subtotal							







NEW YORK CITY DEPARTMENT OF  
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Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
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Bidder:

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: HH112WB1R

Sponsor Agency: Dept of Homeless Services

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
333100	SANITARY SEWER SYSTEM							
	4" DIP	296	LF	20.00	5920.00	30.00	8880.00	14,800.00
	SANITARY MANHOLE - 4' DIA	1	LOC	1500.00	1500.00	1500.00	1500.00	3000.00
	PIPE BEDDING	18	CY	60.00	1080.00	20.00	360.00	1440.00
	Subtotal				8500.00		10,740.00	19,240.00
334113	STORM SEWER SYSTEMS							
	12" HDPE	52	LF	30.00	1560.00	30.00	1560.00	3120.00
	4" PERFORATED PVC PIPE BEDDING	126	LF	4.00	504.00	10.00	1260.00	1764.00
	Subtotal				660.00	20.00	220.00	880.00
	Subtotal				2724.00		3040.00	5764.00
334900	STORM STRUCTURES							
	REMOVE & REPLACE YARD DRAIN CLEAN OUT	1	EA	750.00	750.00	800.00	800.00	1550.00
	CONNECT TO EX. YARD DRAIN / MANHOLE	2	LOC	700.00	1400.00	2300.00	4600.00	6000.00
	Subtotal				3650.00		6400.00	10,050.00
SUB-TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK (HELP SEC BUILDING)					1,285,457.50		1,220,513.00	2,505,970.50





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BIDDER'S ACCOUNT INFORMATION

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

DDC ID: HH112WBRLR

Sponsor Agency: Dept of Homeless Services

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
	<b>CONTRACT 1 - GENERAL CONSTRUCTION WORK (KEENER BUILDING)</b>							
	<b>GENERAL REQUIREMENTS</b>							
Div 1	MOBILIZATION	1	LS	24000.00	24000.00	0.00	0.00	24,000.00
010000					24000.00		0.00	24,000.00
	Subtotal							
013223	PROJECT SURVEY AND LAYOUT (included w/ General Conditions)							
017419	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL	1	LS	3000.00	3000.00	5000.00	5000.00	8000.00
	DISPOSAL				3000.00		5000.00	8000.00
	Subtotal							
Div 2	<b>SITE WORK &amp; DEMOLITION</b>							
024119	SELECTIVE DEMOLITION	1	LS	3500.00	3500.00	4500.00	4500.00	8000.00
	TEMPORARY PROTECTION (MANHOLES, TREES)				576.00	10.00	720.00	1296.00
	REMOVE CHAIN LINK FENCE	72	LF	8.00	800.00	500.00	2000.00	2800.00
	REMOVE 3 FT WIDE WROUGHT FENCE GATE	4	LF	200.00	800.00	3.00	13,200.00	22,000.00
	REMOVE GRASS	4400	SF	2.00	740.00	4.00	1480.00	2220.00
	REMOVE PAVEMENT	370	SF	2.00	2000.00	6000.00	6000.00	8000.00
	MISC. DEMOLITION WORK	1	LS	2000.00	2000.00	27,900.00	27,900.00	44,316.00
	Subtotal							
Div 3	<b>CONCRETE</b>							
033000	CAST-IN-PLACE CONCRETE	62	CY	400.00	24,800.00	600.00	37,200.00	62,000.00
	CONCRETE 24" X 60" CONT. PERIMETER FOOTINGS @MECHANICAL ROOM				24,800.00		37,200.00	62,000.00
	8" CONCRETE REINFORCED SLAB ON GRADE	1434	SF	6.00	8604.00	8.00	11,472.00	20,076.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACT 1 - General Construction  
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Project: Island  
Installation of New Central Boiler Plant and Fuel Tanks for Wards

Location: Wards Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at

Bidder:

DDC ID: HH112WBLR  
Sponsor Agency: Dept of Homeless Services

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
	6" CRASHED STONE SUBBASE	27	CY	32.00	864.00	16.00	432.00	1296.00
	VAPOR BARRIER	1440	SF	1.00	1440.00	3.00	4320.00	5760.00
	FLOOR LEVELING	1440	SF	1.50	2160.00	3.00	4320.00	6480.00
	PERIMETER SOG THICKENING	8	CY	300.00	2400.00	500.00	4000.00	6400.00
	CONCRETE REINFORCED SEPARATE FOOTINGS	6	CY	340.00	2040.00	700.00	4200.00	6240.00
	CONCRETE REINFORCED PIERS	3	CY	360.00	1080.00	650.00	1950.00	3030.00
	CONCRETE REINFORCED PIT	5	CY	340.00	1700.00	600.00	3000.00	4700.00
	6" CONCRETE REINFORCED EQUIPMENT PADS	500	SF	14.00	7000.00	20.00	10000.00	17000.00
	Subtotal				52,033.00		80,374.00	132,407.00
<b>DIV 5</b>	<b>METALS</b>							
051200	STRUCTURAL STEEL							
	MISC. STEEL	1	LS	1000.00	1000.00	1500.00	1500.00	2500.00
	Subtotal				1000.00	1500.00	1500.00	2500.00
<b>DIV 7</b>	<b>THERMAL &amp; MOISTURE PROTECTION</b>							
071326	SELF-ADHERING SHEET WATERPROOFING	1	LS	2200.00	2200.00	2800.00	2800.00	5000.00
	ROUGH CARPENTRY	1210	SF	2.00	2420.00	3.00	3630.00	6050.00
	FOUNDATION AND FOOTING WATERPROOFING				4620.00		6430.00	11,050.00
	Subtotal				7240.00	6430.00	11,050.00	18,690.00
078446	FIRE-RESISTIVE JOINT SYSTEMS	1	LS	400.00	400.00	600.00	600.00	1000.00
	FIRE-RESISTIVE JOINT SYSTEMS				400.00		600.00	1000.00
	Subtotal				400.00	600.00	600.00	1000.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

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Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island  
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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
092900	GYP SUM DRYWALL FINISHES							
	(3) LAYERS 5/8" GWB EACH SIDE IN 1 5/8 M.S. - NON RATED	400	SF	11.00	4400.00	15.00	6000.00	10,400.00
	MISC. FINISH WORK	1	LS	1200.00	1200.00	1600.00	1600.00	2800.00
	Subtotal				5600.00		7600.00	13,200.00
079200	JOINT SEALANTS (Included w/ 078446)							
Div 21	FIRE SUPPRESSION							
210500	COMMON WORK RESULTS FOR FIRE PROTECTION							
	DESIGN CALC'S / ENGINEERING	1	LS	200.00	200.00	800.00	800.00	1000.00
	SYSTEM DRAIN DOWN AND FILL	1	LS	100.00	100.00	400.00	400.00	500.00
	CLEAN, FLUSH AND TEST	1	LS	500.00	500.00	1500.00	1500.00	2000.00
	SYSTEM I.D., LABELS AND COLOR CODING	1	LS	200.00	200.00	400.00	400.00	600.00
	Subtotal				1000.00		3100.00	4100.00
210529	HANGERS AND SUPPORTS							
	SEISMIC RESTRAINTS / PIPING SUPPORTS	1	LS	450.00	450.00	800.00	600.00	1050.00
	Subtotal				450.00		600.00	1050.00
211313	WET-PIPE SPRINKLER SYSTEMS							
	SPRINKLER HEAD	15	EA	75.00	1125.00	80.00	1200.00	2325.00
	2 1/2" DIA - 2" DIA	92	LF	30.00	2760.00	45.00	4140.00	6900.00
	1" DIA	126	LF	15.00	1890.00	30.00	3780.00	5670.00
	2 1/2" OS&Y W/TS & FS	1	LS	3500.00	3500.00	400.00	400.00	3900.00
	TIE-IN	1	EA	120.00	120.00	220.00	220.00	340.00
	Subtotal				9395.00		9740.00	19,135.00







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 Clark Thomas Building, HELP SEC Building, & Keener Building at  
 Location: Wards Island  
 Bidder: \_\_\_\_\_

DDC ID: HH112WB/LR  
 Sponsor Agency: Dept of Homeless Services

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
DIV 22	PLUMBING							
220500	COMMON WORK RESULTS FOR PLUMBING							
	CUTTING, PATCHING, CORING AND FIRE STOP	1	LS	200.00	200.00	180.00	180.00	1,200.00
	CLEAN, FLUSH AND TEST	1	LS	100.00	100.00	1500.00	1500.00	1600.00
	Subtotal				300.00		2500.00	2800.00
220543	HANGERS, SUPPORTS, ANCHORS, AND GUIDES (included w/ 221116, 221316)							
220563	IDENTIFICATION							
	PIPE ID / VALVE TAGS	1	LS	200.00	200.00	500.00	500.00	700.00
	Subtotal				200.00		500.00	700.00
221116	Domestic Water Piping							
	2" DIA	104	LF	30.00	3120.00	35.00	3640.00	6760.00
	TIE-IN	1	LS	600.00	600.00	1200.00	1200.00	1800.00
	PIPE INSULATION	105	LF	5.00	525.00	10.00	1050.00	1575.00
	RPZ - 2"	1	EA	1500.00	1500.00	700.00	700.00	2200.00
	Subtotal				5745.00		6590.00	12,335.00
221316	SANITARY, VENT, AND STORM DRAINAGE PIPING							
	FLOOR DRAIN W/ ASSOCIATED PIPING	2	EA	700.00	1400.00	1200.00	2400.00	3800.00
	TIE-IN	1	LS	700.00	700.00	2000.00	2000.00	2700.00
	Subtotal				2100.00		4400.00	6500.00
DIV 23	HEATING, VENTILATING AND AIR CONDITIONING							
230500	COMMON WORK RESULTS FOR HVAC							
	CUTTING, PATCHING & FIRE STOPPING	1	LS	700.00	700.00	1100.00	1100.00	1800.00
	PENETRATION	1	LS	300.00	300.00	1200.00	1200.00	1500.00
	SLEEVES	1	LS	350.00	350.00	1000.00	1000.00	1350.00
	EQUIPMENT CURBS / PADS	1	LS	2000.00	2000.00	9000.00	3000.00	5000.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

DDC ID: HH112WBLR

Sponsor Agency: Dept of Homeless Services

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
	WELDING REQUIREMENTS	1	LS	1500.00	1500.00	1500.00	1500.00	3000.00
	TEMPORARY BOILER	5	MOS	10,000.00	50,000.00	4000.00	20,000.00	70,000.00
	EQUIPMENT SHIPPING/RIGGING / HANDLING	1	LS	15,000.00	15,000.00	17,000.00	17,000.00	32,000.00
	SYSTEM ID / VALVE TAGS	1	LS	300.00	300.00	300.00	300.00	600.00
	SYSTEM START-UP	1	LS	3000.00	3,000.00	3500.00	3,500.00	6,500.00
	TEMPORARY HEAT	1	LS	7000.00	7,000.00	8000.00	8,000.00	15,000.00
	Subtotal				80,150.00		56,600.00	136,750.00
230513	COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT (Included w/ 232123)							
230548	FOUNDATIONS, VIBRATION ISOLATION, & SUPPORTS FOR RIGIDLY SUPPORTED EQUIPMENT (SEISMIC DESIGN)	1	LS	1200.00	1200.00	1800.00	1,800.00	3,000.00
	MISC. DUCT, PIPE AND EQUIPMENT SUPPORT	1	LS	700.00	700.00	1200.00	1,200.00	1,900.00
	VIBRATION ISOLATION				1,900.00		3,000.00	4,900.00
	Subtotal							
230550	BASIC MECHANICAL MATERIALS AND METHODS PREFABRICATED MECHANICAL ROOM	1580	SF	190.00	300,200.00	160.00	252,800.00	553,000.00
	Subtotal				300,200.00		252,800.00	553,000.00
230593	TESTING, BALANCING AND ADJUSTING CLEAN, FLUSH AND TEST (PIPING)	1	LS	500.00	500.00	3600.00	3,600.00	4100.00
	Subtotal				500.00		3,600.00	4,100.00
230700	HVAC INSULATION DUCT INSULATION (Included w/ other)							
	RE-INSULATE EX STEAM PIPE, HEATING HOT WATER, DOMESTIC HOT WATER, HEAT EXCHANGER, ETC)	360	LF	12.00	4320.00	28.00	10,080.00	14,400.00
	PIPE INSULATION	112	LF	15.00	1,680.00	25.00	2,800.00	4,480.00
	Subtotal				6000.00		12,880.00	18,880.00

21-35R





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACT FORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Island  
Installation of New Central Boiler Plant and Fuel Tanks for Wards

Location: Wards Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at

Bidder:

DDC ID: HH112WB/LR  
Sponsor Agency: Dept of Homeless Services

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
230900	HVAC INSTRUMENTATION AND CONTROLS HVAC INSTRUMENTATION AND CONTROLS TO INCLUDE THE FOLLOWING: STEAM BOILER (B-1, B-2) TRIPLE BOILER FEED SET FUEL OIL CONTROL SYSTEM EXHAUST FAN (EF-C&D) BLOW OFF TANK CHEMICAL TREATMENT SYSTEM PACKAGE WATER SOFTER ELECTRIC UNIT HEATER (EUH-1, 2) - 3 KW MOTORIZED DAMPER MISC. SYSTEM REQUIREMENTS	1	LS	50,000.00	50,000.00	55,000.00	55,000.00	105,000.00
	Subtotal				50,000.00		55,000.00	105,000.00
230910	SPECIAL MECHANICAL SYSTEMS ELECTRIC UNIT HEATER (EUH-A) - 7.5KW ELECTRIC UNIT HEATER (EUH-B) - 5 KW EF-D- 1300 CFM, EF-C - 2000 CFM, Subtotal	1 1 1 1	EA EA EA EA	1,300.00 1,300.00 2,000.00 3,000.00	1,300.00 1,300.00 2,000.00 3,000.00	400.00 425.00 710.00 720.00	400.00 425.00 710.00 720.00	1,700.00 1,725.00 2,710.00 3,720.00
230995	ENCLOSED CONTROLLERS (included w/ 230900)				7,600.00		22,550.00	98,550.00
231113	FUELOIL SYSTEM PIPING AND STORAGE TANKS OIL PIPE, FILL BOX VENT. ETC...2" DIA FUEL VALVE SPECIALTIES, FILL BOX ETC... OIL TANK - 7000 GAL FUEL OIL FILL	152 1 2 14,000	LF EA EA GAL	15.00 1,800.00 30,000.00 5.00	2,280.00 1,800.00 60,000.00 70,000.00	55.00 2,200.00 6,000.00 0.50	8,360.00 2,200.00 12,000.00 7,000.00	10,640.00 4,000.00 72,000.00 77,000.00

*INCLUDED IN  
L.S.  
FROM ABOVE.*





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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
	FUEL OIL CONTAINMENT WELD STEEL 14 GAUGE (4H X 11.5' W X 26L)	2	EA	16,000.00	32,000.00	5000.00	10,000.00	42,000.00
	AUTO FUEL OIL FILTRATION SYSTEM & ALARM CONTROL PANEL ETC..	2	EA	4000.00	8000.00	1000.00	2000.00	10,000.00
	Subtotal				174,030.00		41,560.00	215,640.00
232113	HVAC PIPING							
	WATER FEED SYSTEM - 2" DIA W/ INSULATION, ETC..	462	LF	12.00	5524.00	60.00	27,720.00	33,264.00
	TIE-IN EXISTING WATER SYSTEM	1	LF	300.00	300.00	550.00	550.00	850.00
	VALVES & SPECIALTIES (PIPING SYSTEMS)	1	LS	11,000.00	11,000.00	16000.00	16,000.00	27,000.00
	LPS/C PIPE							
	10" DIA (BURIED)	462	LF	100.00	46,200.00	130.00	60,060.00	106,260.00
	6" DIA (BURIED)	462	LF	50.00	23,100.00	76.00	35,112.00	58,212.00
	10" DIA (HEADER PIPE)	40	LF	100.00	4,000.00	130.00	5,200.00	9,200.00
	6" DIA	72	LF	50.00	3,600.00	70.00	5,040.00	8,640.00
	TIE-IN TO EXISTING STEAM & CONDENSATE SYSTEM	1	LS	1,200.00	1,200.00	2,200.00	2,200.00	3,400.00
	CATHODIC PROTECTION	1	LS	5,500.00	5,500.00	10,000.00	10,000.00	15,500.00
	HOOK-UP EQUIPMENT:							
	STEAM BOILER (B-1, B-2)	2	EA	4,000.00	8,000.00	6,500.00	13,000.00	21,000.00
	TRIPLE BOILER FEED SET (BFP-1) - 225 GAL TANK W/ PUMP	1	PKG	3,000.00	3,000.00	5,000.00	5,000.00	8,000.00
	CONDENSATE PUMP	2	SET	1,200.00	2,400.00	1,600.00	3,200.00	5,600.00
	DUPLEX FUEL OIL PUMP SET	1	SET	1,200.00	1,200.00	1,600.00	1,600.00	2,800.00
	AUTO FUEL OIL FILTRATION SYSTEM	1	LS	1,600.00	1,600.00	800.00	800.00	2,400.00
	EXHAUST FAN (EF-C&D)	2	EA	520.00	1,040.00	600.00	1,200.00	1,520.00
	OIL TANK - 7000 GAL	2	EA	1,600.00	3,200.00	2,300.00	4,600.00	5,640.00
	BLOW OFF TANK	1	EA	1,600.00	1,600.00	700.00	700.00	1,300.00
	CHEMICAL TREATMENT SYSTEM	1	LS	175.00	175.00	700.00	700.00	875.00
	PACKAGE WATER SOFTER	1	PKG	175.00	175.00	400.00	400.00	575.00
	MISC. HOOK-UPS REQUIREMENTS	1	SET	1,200.00	1,200.00	2,200.00	2,200.00	3,400.00
	Subtotal				118,274.00		195,482.00	313,756.00







NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACT BIDDING AND ADMINISTRATION

CONTRACT 1 - General Construction

Project: Island  
Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Sponsor Agency: Dept of Homeless Services

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
232123	HVAC PUMPS							
	TRIPLE BOILER FEED SET (BFP-1) - 225 GAL TANK W/ PUMP	1	PKG	18,000.00	18,000.00	4,000.00	4,000.00	22,000.00
	DUPLEX FUEL OIL PUMP SET	1	EA	13,000.00	13,000.00	4,000.00	4,000.00	17,000.00
	CR3 & CR-4	2	EA	4,000.00	8,000.00	2,000.00	4,000.00	12,000.00
	Subtotal				37,000.00		12,000.00	49,000.00
232600	CHEMICAL WATER TREATMENT							
	CHEMICAL TREATMENT SYSTEM	1	LS	3,000.00	3,000.00	1,200.00	1,200.00	4,200.00
	PACKAGE WATER SOFTER	1	PKG	2,600.00	2,600.00	1,000.00	1,000.00	3,600.00
	BLOW OFF TANK	1	EA	6,000.00	6,000.00	2,100.00	2,100.00	8,100.00
	Subtotal				11,600.00		4,300.00	15,900.00
233113	METAL DUCTWORK							
	GALVANIZED STEEL DUCT	1	LS	16,000.00	16,000.00	22,000.00	22,000.00	38,000.00
	PLENUM W/ INSULATION	310	LBS	5.00	1,550.00	8.00	2,480.00	4,030.00
	GOOSENECK	1	EA	300.00	300.00	250.00	250.00	550.00
	WMS	1	EA	500.00	500.00	1,000.00	1,000.00	1,500.00
	LOUVER	100	SF	40.00	4,000.00	70.00	8,400.00	13,200.00
	ACOUSTICAL LINING	1'	LS	1200.00	1,200.00	1,600.00	1,600.00	2,800.00
	Subtotal				24,350.00		35,730.00	60,080.00
233313	DAMPERS							
	ALD	120	SF	250.00	30,000.00	200.00	24,000.00	54,000.00
	FIRE DAMPER	100	SF	250.00	25,000.00	200.00	20,000.00	45,000.00
	Subtotal				55,000.00		44,000.00	99,000.00
236100	BREACHINGS, CHIMNEYS AND STACKS							
	16" DIA FLUE	16	LF	150.00	2,400.00	80.00	1,280.00	3,680.00
	12" DIA METER DRAFT W/ BAROMETRIC DAMPER	18	LF	100.00	1,800.00	60.00	1,080.00	2,880.00
	FLUE CLEAN OUT - 16" DIA	2	EA	800.00	1,600.00	400.00	800.00	2,400.00
	Subtotal				58,000.00		3,160.00	89,600.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS BIDDER INFORMATION

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

Bidder:

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
235200	HEAT GENERATION	2	EA	75,000.00	150,000.00	15,000.00	30,000.00	180,000.00
	STEAM BOILER (B-1, B-2) - 96 BHP, 3200 MBH				150,000.00		30,000.00	180,000.00
	Subtotal							
Div 26	ELECTRICAL SYSTEMS							
260500	COMMON WORK RESULTS FOR ELECTRICAL							
	TEMPORARY ELECTRIC	1	LS	400.00	400.00	600.00	600.00	1,000.00
	CUTTING & PATCHING	1	LS	300.00	300.00	1,100.00	1,100.00	1,400.00
	EXCAVATION & BACKFILL	290	LF	8.00	2,320.00	22.00	6,380.00	8,700.00
	Subtotal				3,020.00		8,080.00	11,100.00
260519	CONDUCTORS AND CABLES							
	12 AWG	780	LF	1.00	780.00	2.00	1,560.00	2,340.00
	Subtotal				780.00		1,560.00	2,340.00
260526	GROUNDING AND BONDING (Included w/ 260519)							
260529	SUPPORTING DEVICES (Included w/ 260533)							
260533	RACEWAYS AND BOXES							
	2" CONDUIT	132	LF	5.00	660.00	18.00	2,376.00	3,036.00
	3/4" CONDUIT	390	LF	2.00	780.00	14.00	5,460.00	6,240.00
	Subtotal				1,440.00		7,836.00	9,276.00
260543	UNDERGROUND DUCTS AND UTILITY STRUCTURES							
	2" PVC	870	LF	2.00	1,740.00	14.00	12,180.00	13,920.00
	Subtotal				1,740.00		12,180.00	13,920.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS ELDERBROOK AVENUE

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

DDC ID: HH112WB/LR  
Sponsor Agency: Dept of Homeless Services

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
260548	SEISMIC CONTROLS FOR ELECTRICAL WORK (Included w/ 260533)							
260553	ELECTRICAL IDENTIFICATION (Included w/ 260500)							
260573	OVERCURRENT PROTECTION DEVICE COORDINATION (Included w/ 262416)							
260800	ELECTRICAL TESTING (Included w/ 260500)							
262001	FEEDERS AND BRANCH CIRCUITRY	650	LF	5.00	3250.00	4.00	2600.00	5850.00
	6 AWG	170	LF	1.00	170.00	2.00	340.00	510.00
	Subtotal				3420.00		2940.00	6360.00
262416	PANELBOARDS							
	TERMINATE PANEL F.B.O.	1	EA	500.00	500.00	400.00	400.00	900.00
	Subtotal				500.00		400.00	900.00
262802	SELECTION OF OVERCURRENT DEVICES (Included w/ 262416)							
262813	FUSES (Included w/ 262416)							
262816	ENCLOSED SWITCHES AND CIRCUIT BREAKERS	1	EA	1500.00	1500.00	1500.00	1500.00	3000.00
	200A NEMA 1 DISCONNECT	1	LOC	400.00	400.00	600.00	600.00	1000.00
	TAP EXISTING BUS				1900.00		2100.00	4000.00
	Subtotal							





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM  
CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards  
Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at  
Location: Wards Island

Bidder:

DDC ID: HH112WB/LR  
Sponsor Agency: Dept of Homeless Services

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
262923	VARIABLE FREQUENCY CONTROLLERS (INSTALLATION OF)	1	LS	500.00	500.00	300.00	300.00	3500.00
	VARIABLE FREQUENCY CONTROLLERS (INSTALLATION OF)				500.00		300.00	3500.00
	Subtotal							
266003	FIRE PROTECTIVE ALARM SYSTEM	1	LS	120.00	120.00	350.00	350.00	470.00
	TIE INTO EXISTING SYSTEM	1	EA	250.00	250.00	200.00	200.00	450.00
	PULL STATIONS	2	EA	300.00	600.00	220.00	440.00	1040.00
	SMOKE DETECTORS	2	EA	300.00	600.00	200.00	400.00	1000.00
	HEAT DETECTORS	1	EA	200.00	200.00	190.00	190.00	390.00
	TAMPER SWITCHES	1	EA	200.00	200.00	180.00	180.00	380.00
	FLOW SWITCHES	2	EA	400.00	800.00	160.00	320.00	1120.00
	STROBE UNITS	2	EA	500.00	1000.00	150.00	300.00	1300.00
	HORN STROBE UNITS	1	LS	1000.00	1000.00	450.00	450.00	5500.00
	PROGRAMMING / ENGINEERING				4770.00		6880.00	11,650.00
	Subtotal							
DIV 31	EARTHWORK							
310000	EARTHWORK							
	TRENCH EXCAVATION FOR FOUNDATION WORK	360	CY	30.00	10,800.00	60.00	21,600.00	32,400.00
	BACKFILL	275	CY	25.00	6,875.00	50.00	13,750.00	20,625.00
	HAUL	82	CY	20.00	1,640.00	40.00	3,280.00	4,920.00
	TRENCH EXCAVATION AND BACKFILL FOR ELEC. & MECH. CONDUIT	430	CY	60.00	25,800.00	80.00	34,400.00	60,200.00
	TRENCH EXCAVATION & BACKFILL FOR SEWER	60	CY	65.00	3,900.00	85.00	5,100.00	9,000.00
	Subtotal				49,015.00		78,130.00	127,145.00







NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

Location: Wards Island

Bidder:

CONTRACTORS BIDDER: KDOVNF0RM

CONTRACT 1 - General Construction

DDC ID: HH112WB/LR

Sponsor Agency: Dept of Homeless Services

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
312500	SOIL EROSION AND SEDIMENT CONTROL							
	TEMPORARY CONSTRUCTION ENTRANCE 20' X 50'	610	SF	4.00	2440.00	6.00	3660.00	6100.00
	SILT FENCE	172	LF	2.00	344.00	5.00	860.00	1204.00
	DEWATERING	1	LS	5000.00	5000.00	12000.00	17000.00	22000.00
	SOIL STOCKPILE	106	CY	12.00	1272.00	16.00	1696.00	2968.00
	Subtotal				9056.00		23,216.00	32,272.00
DIV 32	EXTERIOR IMPROVEMENTS							
320516	AGGREGATE MATERIALS (Included w/ 321600)							
321600	CONCRETE CURB AND SIDEWALKS							
	CONCRETE PAVEMENT	1372	SF	6.00	8232.00	10.00	13,720.00	21,952.00
	Subtotal				8232.00		13,720.00	21,952.00
329000	LANDSCAPE PLANTING							
	GRASS PLANTERS	3106	SF	5.00	15,530.00	9.00	27,954.00	43,484.00
	EVERGREEN TREE PLANTING	16	EA	800.00	12,800.00	600.00	9600.00	22,400.00
	MISC. LANDSCAPING	1	LS	6500.00	6500.00	10,000.00	10,000.00	16,500.00
	Subtotal				34,830.00		47,554.00	82,384.00
329200	LAWNS AND GRASSES (Included w/329000)							
DIV 33	UTILITIES							
330200	PROTECTION OF EXISTING UTILITIES							
	PROTECTION OF EXISTING UTILITIES	1	LS	3000.00	3000.00	2000.00	2000.00	5000.00
	Subtotal				3000.00		2000.00	5000.00
331116	WATER DISTRIBUTION SYSTEM							
	2 1/2" DIA FIRE PROTECTION W/ INSULATION (UD)	340	LF	25.00	4750.00	45.00	17,550.00	27,300.00
	WATER FEED SYSTEM - 2" DIA W/ INSULATION, ETC.	385	LF	15.00	5775.00	40.00	15,400.00	21,175.00
	TE-IN	1	LS	1000.00	1000.00	1500.00	1500.00	2500.00





NEW YORK CITY DEPARTMENT OF  
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Installation of New Central Boiler Plant and Fuel Tanks for Wards

Project: Island

Clark Thomas Building, HELP SEC Building, & Keener Building at

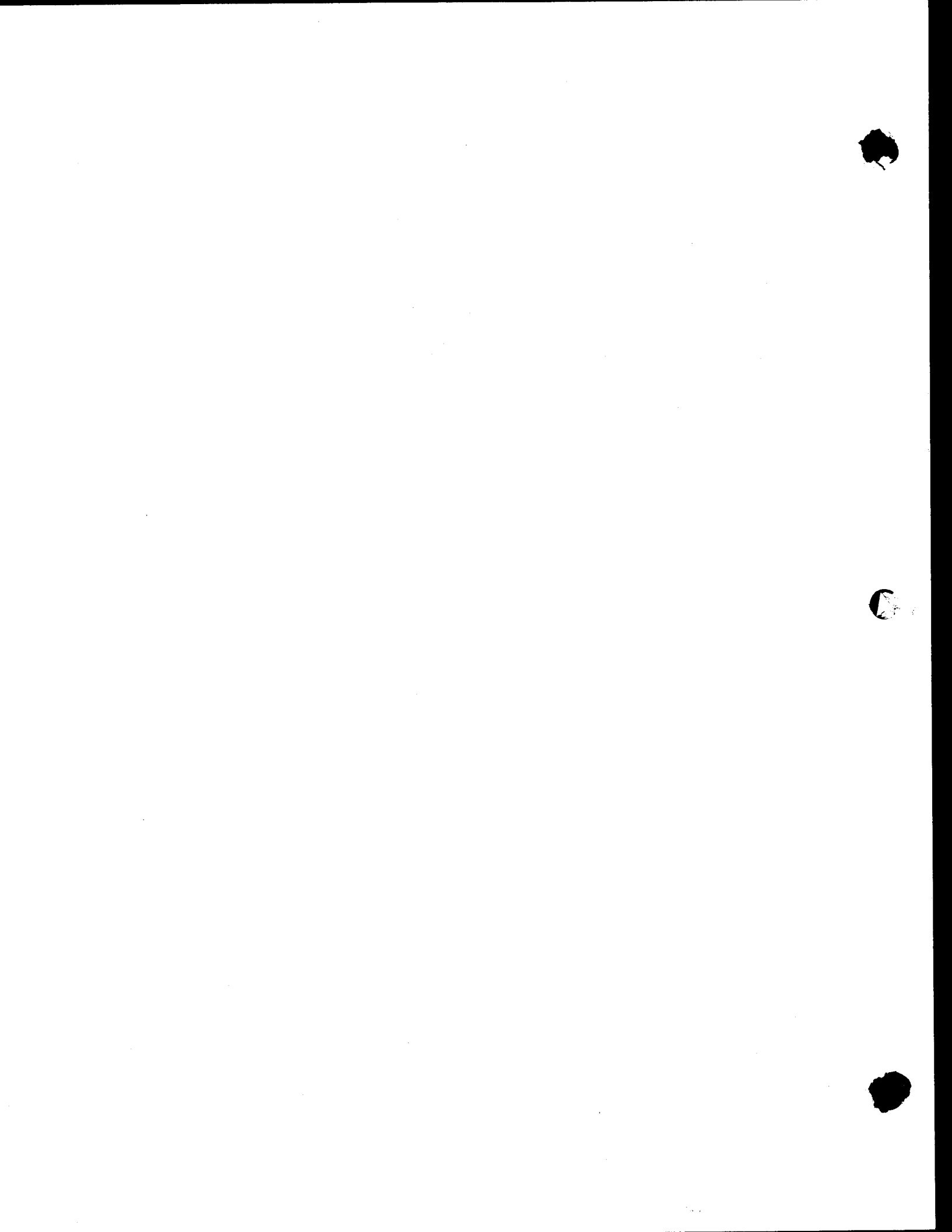
Location: Wards Island

Bidder:

DDC ID: HH112WBRL

Sponsor Agency: Dept of Homeless Services

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
	PIPE BEDDING (DOMESTIC & FIRE WATER)	44	CY	\$0.00	2200.00	25.00	1100.00	3300.00
	Subtotal				18725.00		35550.00	54275.00
333100	SANITARY SEWER SYSTEM							
	4" DIA - DIP	40	LF	25.00	2250.00	30.00	2700.00	4950.00
	PIPE BEDDING (MECHANICAL & SEWER & STORM PIPING SYSTEM)	58	CY	50.00	2900.00	20.00	1160.00	4060.00
	CONNECT TO EX. STORM & SEWER MANHOLE	1	LOC	600.00	600.00	2400.00	2400.00	3000.00
	Subtotal				5750.00		6260.00	12010.00
334113	STORM SEWER SYSTEMS							
	6" DIA - DIP	100	LF	30.00	3000.00	30.00	3000.00	6000.00
	Subtotal				3000.00		3000.00	6000.00
334900	STORM STRUCTURES							
	CLEAN OUT	2	EA	400.00	800.00	400.00	800.00	1600.00
	CONNECT TO EX. STORM & SEWER MANHOLE	1	LOC	600.00	600.00	2400.00	2400.00	3000.00
	Subtotal				1400.00		3200.00	4600.00
SUB-TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK (KEENER BUILDING)					1,299,846.00		1,273,327.00	2,573,173.00
TOTAL CONTRACT #1 - GENERAL CONSTRUCTION WORK (CLARK THOMAS BUILDING, HELP SEC BUILDING, & KEENER BUILDING)					3,196,504.00		3,178,946.80	6,375,451.40



2

Tax ID #: 11-3181881

PIN#: 8502013HL0004C



Contract # 1 - General Construction Work

The City of New York

**SCHEDULE B - Subcontractor Utilization Plan -Part I: Agency's Target**

This page to be completed by contracting agency

**Contract Overview**

Pin # 8502013HL0004C FMS Project ID#: HH112WBLR

Project Title Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project

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)

Clark Thomas Building: consists of the demolition and removal of the abandoned steam laundry equipment and piping located in the basement of the Clark Thomas Building; New construction will consist of two (2) new rooms in the basement and the installation of a new fuel oil tank, fuel oil pumps, two (2) new dual fuel low pressure steam boilers and associated piping, ancillary equipment, louvers, and flues. Contract work will also include the connection to the existing steam supply and condensate return main piping in the building's basement and the installation of any/all related electrical, plumbing, and sprinkler systems.

HELP SEC and Keener Buildings: consists of the installation of one (1) new prefabricated mechanical room building at both the HELP SEC and Keener Building sites. Each building will have a room for fuel oil tanks and a room for boilers. Each building will also contain two (2) fuel oil tanks, fuel oil pumps, two (2) dual fuel low pressure steam boilers, exhaust fans, louvers, boiler control panels, steam and condensate piping, electrical and fire alarm conduits and wiring, plumbing piping, and sprinklers. Contract work will also consist of the installation of utilities piping from the prefabricated building locations to the locations of the existing HELP SEC and Keener incoming services, and connections to existing building utilities.

(1)  **Target Subcontracting Percentage**  
 Percentage of total contract dollar value that agency estimates will be awarded to subcontractors in amounts under \$1 million for construction and professional services. 10 %

**Subcontractor Participation Goals**  
Complete and enter total for each Construction or Professional Services, or both (if applicable).

Group	Construction	Professional Services
Black American	Unspecified %	%
Hispanic American	Unspecified %	%
Asian American	Unspecified %	No Goal
Caucasian Female	No Goal	%
<b>Total Participation Goals</b>	<b>(2) 31 %</b>	<b>(3) %</b>

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



Tax ID #: 11-3181881

PIN#: 8502013HLO004C

**SCHEDULE B - Subcontractor Utilization Plan – Part II: Bidder/Proposer Subcontracting Plan**

This page and the next (Part II herein) are to be completed by the bidder/proposer. **AFFIRMATIONS; Bidder/proposer must check the applicable boxes below, affirming compliance with M/WBE requirements.**

Bidder/proposer  AFFIRMS or  DOES NOT AFFIRM [statement below]

It is a material term of the contract to be awarded that, with respect to the total amount of the contract to be awarded, bidder/proposer will award one or more subcontracts for amounts under one million dollars, sufficient to meet or exceed the Target Subcontracting Percentage (as set forth in Part I) unless it obtains a full or partial waiver thereof, and it will award subcontracts sufficient to meet or exceed the Total Participation Goals (as set forth in Part I) unless such goals are modified by the Agency.

- Bidder/proposer  AFFIRMS that it intends to meet or exceed the Target Subcontracting Percentage (as set forth in Part 1); or
- AFFIRMS that it has obtained a full/partial pre-award waiver of the Target Subcontracting Percentage (as set forth in Part I) and intends to award the modified Target Subcontracting Percentage, if any; or
- DOES NOT AFFIRM

**Section I: Prime Contractor Contact Information**

Tax ID # 11-3181881 FMS Vendor ID # \_\_\_\_\_  
 Business Name BGE INDUSTRIES INC Contact Person PANKAS KUMAR.  
 Address 40-49, 72 STREET, WOODSIDE, NY 11377  
 Telephone # 718-429-1648 Email info@bgeindustries.org

**Section II: General Contract Information**

**1. Define the industry in which work is to be performed.**

- **Construction** includes all contracts for the construction, rehabilitation, and/or renovation of physical structures. This category does include CM Build as well as other construction related services such as: demolition, asbestos and lead abatement, and painting services, carpentry services, carpet installation and removal, where related to new construction and not maintenance.
- **Professional Services** are a class of services that typically require the provider to have some specialized field or advanced degree. Services of this type include: legal, management consulting, information technology, accounting, auditing, actuarial, advertising, health services, pure construction management, environmental analysis, scientific testing, architecture and engineering, and traffic studies, and similar services.

- a. Type of work on Prime Contract (Check one):  Construction  Professional Services
- b. Type of work on Subcontract (Check all that apply):  Construction  Professional Services  Other

2. What is the expected percentage of the total contract dollar value that you expect to award to all subcontracts? 15.34% 6/18/13.
3. Will you award subcontract(s) in amounts below \$ 1 million for construction and/or professional services contracts within the first 12 months of the notice to proceed on the contract?  Yes  No

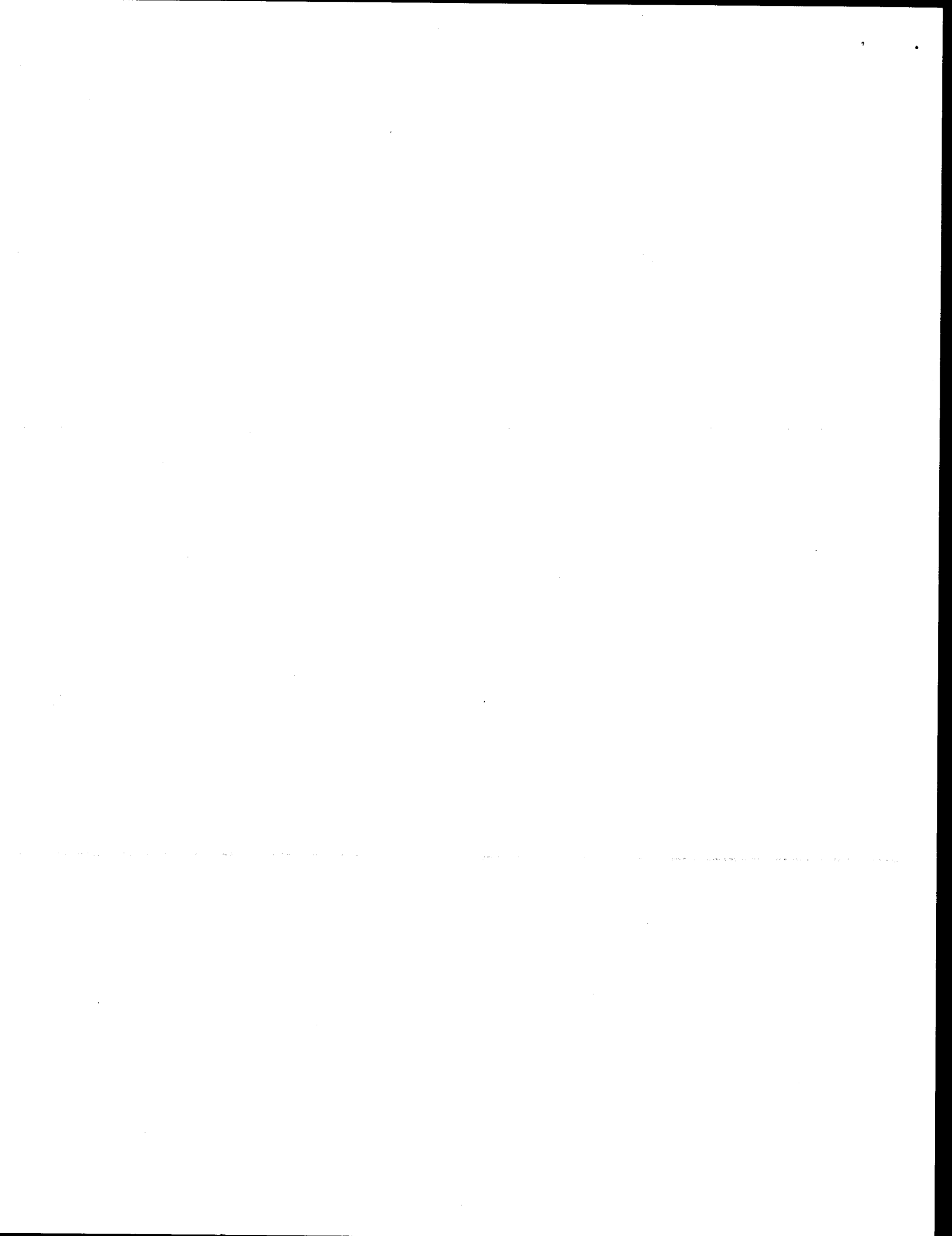
**Section III: Subcontractor Utilization Summary**

**IMPORTANT: If you do not anticipate that you will subcontract at the target level the agency has specified, because you will perform more of the work yourself, you must seek a waiver of the Target Subcontracting Percentage by completing p. 9).**

Step 1:	Subcontracts under \$1M (4) (construction/professional services)	Total Bid/Proposal Value	Calculated Target Subcontracting Percentage
Calculate the percentage (of your total bid) that will go towards subcontracts under \$1M for construction and/or professional services	<u>988,500.00</u>	<u>6,443,451.40</u>	<u>15.34%</u>
	<u>6,500,000.00</u>	<u>÷ \$ 6,443,451.40 x 100 =</u>	<u>10.08%</u>

- **Subcontracts under \$1M (construction/professional services):** Enter the value you expect to award to subcontractors in dollars for amounts under \$1 million for construction and/or professional services. This value defines the amount that participation goals apply to, and will be entered into the first line of Step 2.
- **Total Bid/Proposal Value:** Provide the dollar amount of the bid/proposal.
- **Calculated Target Subcontracting Percentage:** The percentage of the total contract dollar value that will be awarded to one or more subcontractors for amounts under \$1 million for construction and/or professional services. This percentage must equal or exceed the percentage listed by the agency on page 1, at line (1).

**NOTE: The "Calculated Target Subcontracting Percentage" MUST equal or exceed the Target Subcontracting Percentage listed by the agency on Page 6, Line (1).**





Tax ID #: 11-3181881

PIN#: 850201340004C

**SCHEDULE B - cont.**

**Step 2:**

Calculate value of subcontractor participation goals

**Subcontracts under \$1M**

(construction/professional services)

a. Copy value from Step 1, line (4) – the total value of all expected subcontracts under \$1M for construction and/or professional services

988,500.00 ✓  
\$ 650,000.00 ✓  
6/18/13

b. \* From line a. above, allocate the dollar value of "Subcontracts under \$1M" by Construction and Professional Services,

**Construction**                      **Professional Services**

\* If all subcontracts under \$1M are in one industry, enter '0' for the industry with no subcontracts.

988,500.00 ✓  
6/18/13

\* Amounts listed on these lines should add up to the value from line a.

**Subcontracts under \$1M by Industry** \$ 650,000.00

\* For Construction enter percentage from line (2) from Page 6.

\* For Professional Services enter percentage from line (3) from Page 6.

c. \* **Total Participation Goals Percentages must be copied from Part I, lines (2) and (3).**

**Total Participation Goals** x 31 % ✓ x \_\_\_\_\_ %

d. **Value of Total Participation Goals** \$ 201,500.00

**Step 3:**

**Subcontracts in Amounts Under \$1 M Scope of Work – Construction**

Enter brief description of type(s) of subcontracts in amounts under \$1M anticipated, by type of work, not by name of subcontractor.

PLUMBING WORK = \$ 205,000.00  
HVAC WORK = \$ 235,000.00 (MBE) ✓  
ELECTRICAL WORK = \$ 210,000.00  
CONCRETE & SITE WORK = \$ 338,500.00 (MBE)  
SUBTOTAL AMOUNT = \$ 650,000.00  
6/18/13

(VERDUGO & GENERAL CONTRACTORS)

**Subcontracts in Amounts Under \$1 M Scope of Work – Professional Services**

Enter brief description of type(s) of subcontracts in amounts under \$1M anticipated, by type of work, not by name of subcontractor.

**Section IV: Vendor Certification and Required Affirmations**

I hereby 1) acknowledge my understanding of the M/WBE requirements as set forth herein and the pertinent provisions of Local Law 129 of 2005, and the rules promulgated thereunder; 2) affirm that the information supplied in support of this subcontractor utilization plan is true and correct; 3) agree, if awarded this Contract, to comply with the M/WBE requirements of this Contract and the pertinent provisions of Local Law 129 of 2005, 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 subcontract(s) sufficient to meet the Target Subcontracting Percentage, unless a waiver is obtained, and the Vendor will award subcontract(s) sufficient to meet the Total Participation Goals unless such goals are modified by the Agency; and 5) agree and affirm, if awarded this contract the Vendor intends to make all reasonable, good faith efforts to meet the Target Subcontracting Percentage, or if the Vendor has obtained a waiver, the Vendor intends to meet the modified Target Subcontracting Percentage, if any, and the Vendor intends to solicit and obtain the participation of M/WBEs so as to meet the Total Participation Goals unless modified by the Agency.

Signature [Signature] Date 5/23/13  
Print Name PANKAS KUMAR Title PRESIDENT



**BIDDER'S IDENTIFICATION OF SUBCONTRACTORS**

Project ID: HH112WBLR

**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:**

ZONE PLUMBING & HEATING NON / MBE  
(Print Name)

Agreed Amount To Be Paid To Subcontractor: \$ 205,000.00

2. **HVAC CONTRACTOR:**

GEORGE MECHANICAL CORP. NON / MBE  
(Print Name)

Agreed Amount To Be Paid To Subcontractor: \$ 235,000.00

3. **ELECTRICAL CONTRACTOR:**

A & D ELECTRIC CORP. NON / MBE  
(Print Name)

Agreed Amount To Be Paid To Subcontractor: \$ 210,000.00

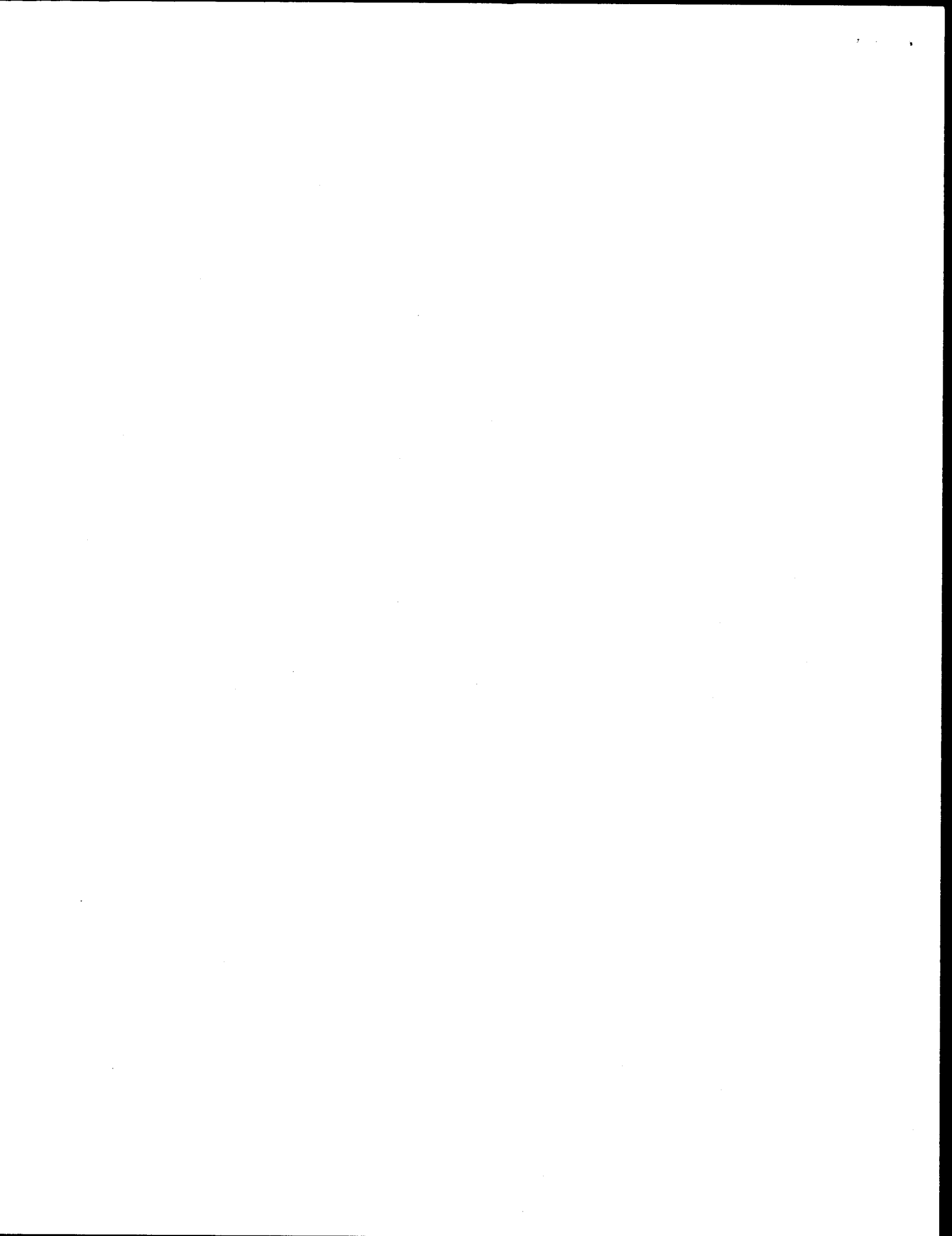
**BIDDER'S SIGNATURE:** The Bidder must sign this form in the space provided below:

Name of Bidder: BAE INDUSTRIES INC

By: [Signature]  
Signature of Partner or Corporate Officer

Print Name: PANKAS KUMAR

Title: PRESIDENT



## 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: BOE INDUSTRIES INC

DDC Project Number: HH112WBLR.

Company Size: \_\_\_\_\_ Ten (10) employees or less

Greater than ten (10) employees

YES Company has previously worked for DDC

**2. Type(s) of Construction Work**

TYPE OF WORK	LAST 3 YEARS	THIS PROJECT
General Building Construction	<input checked="" type="checkbox"/>	_____
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	<input checked="" type="checkbox"/>	_____
Carpentry and Floor Work	<input checked="" type="checkbox"/>	_____
Roofing, Siding, and Sheet Metal	<input checked="" type="checkbox"/>	_____
Concrete Work	<input checked="" type="checkbox"/>	_____
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.

100

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

YEAR	INTRASTATE RATE	INTERSTATE RATE
<u>2012</u>	<u>0.87</u>	<u>0.87</u>
<u>2011</u>	<u>0.87</u>	<u>0.87</u>
<u>2010</u>	<u>0.87</u>	<u>0.87</u>

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

4. OSHA Information:

NONE  
YES

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).

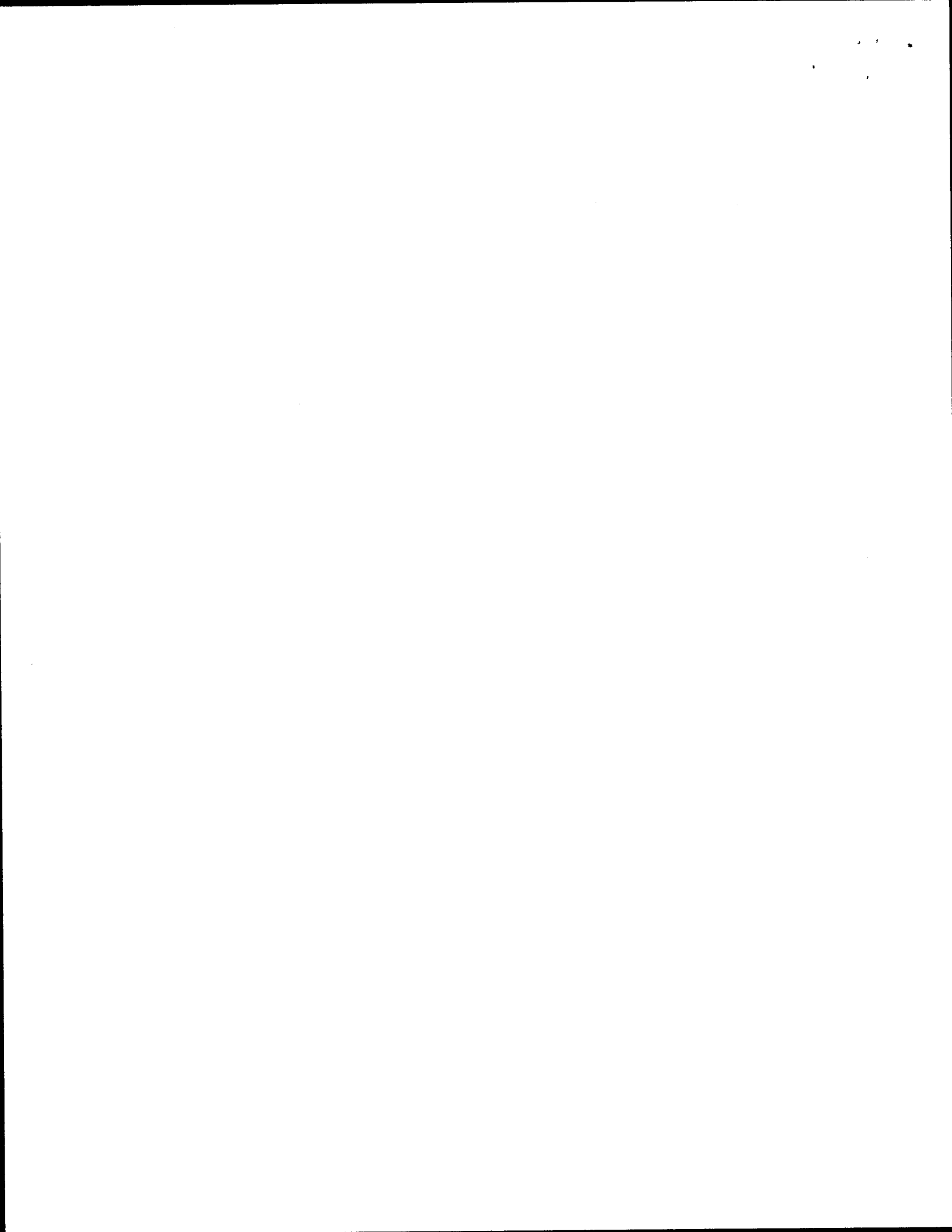
The Occupational Safety and Health Act (OSHA) of 1970 requires employers with ten or more employees, on a yearly basis to complete and maintain on file the form entitled "Log of Work-related Injuries and Illnesses". This form is commonly referred to as the OSHA 300 Log (OSHA 200 Log for 2001 and earlier).

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
2012	26,410	0
2011	28,880	6.92
2010	27,260	0

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)

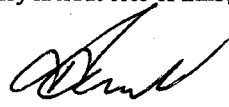
\_\_\_\_\_ Contractor previously audited by the DDC Office of Site Safety.

Q  
 \_\_\_\_\_ DDC Project Number(s): \_\_\_\_\_

YES \_\_\_\_\_ 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: 5/23/13

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

Title: PRESIDENT



**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: Queens, New York  
3rd June, 2013.



SIGNATURE

PANKAS KUMAR

PRINTED NAME

PRESIDENT

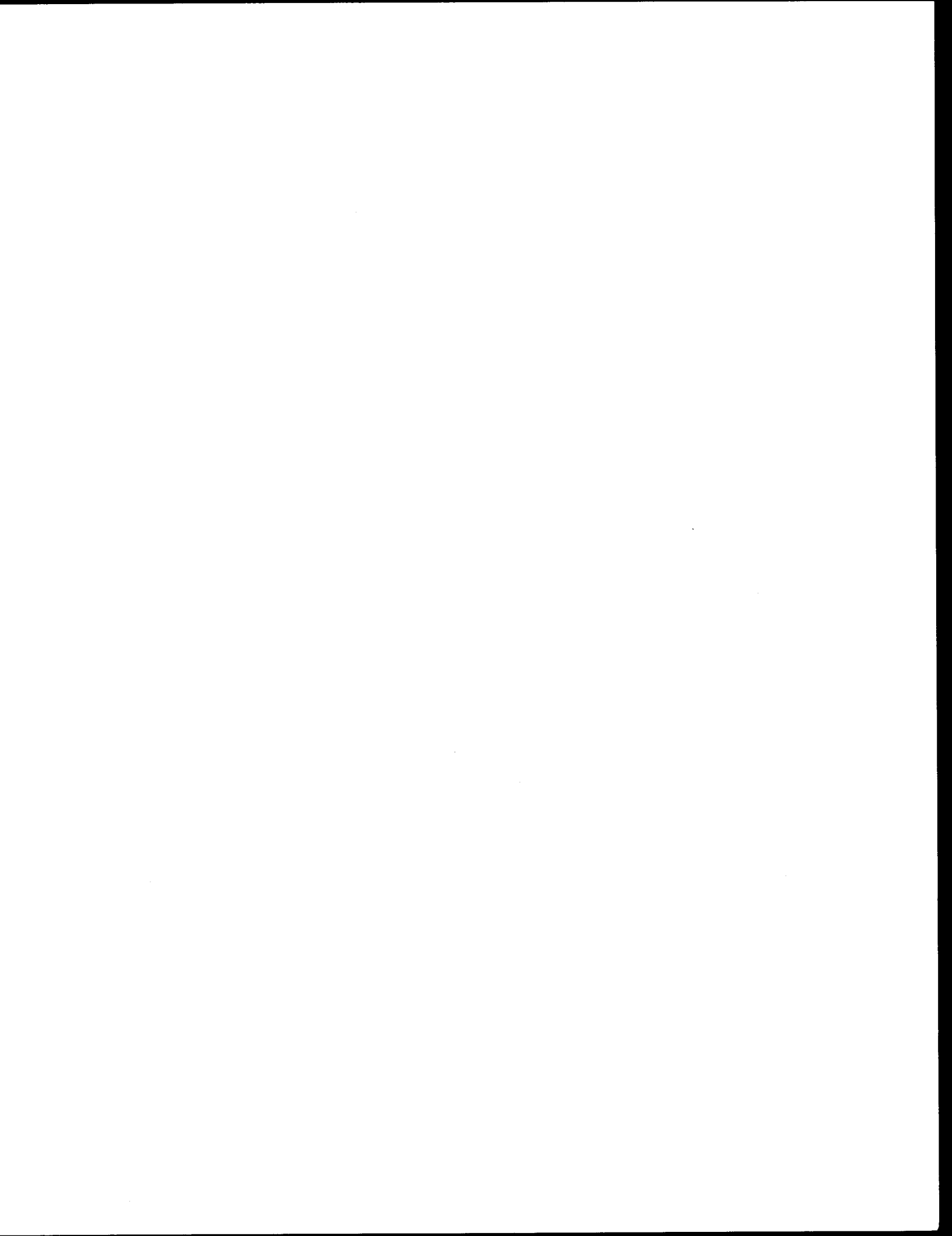
TITLE

Sworn to before me this  
3rd day of June, 2013.

  
Notary Public

Dated: 09/03/13.

ROBERT GUERRERO  
Notary Public, State of New York  
No. 4787428  
Qualified in Queens County  
Certificate Filed in New York and Nassau Counties  
Commission Expires Oct. 31, 2013



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.

*INSTALLATION OF NEW BOILER PLANT & FUEL TANK*  
The undersigned, as a Contractor or Subcontractor (<sup>KH112WBLR</sup> hereinafter Contractor) on the Project known as WARDS ISLAND, NY and located at WARDS ISLAND, 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: 7/19/13

BAE INDUSTRIES INC  
(Name of Contractor or subcontractor)

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


(Authorized Officer & Title) MEHERBAN MASHRAQUI (PROJECT MANAGER)

40-49, 72 STREET, WOODSIDE, NY 11377  
(Address)

718-429-1648 / 7442  
(Phone) (Fax)

Contractor's State License # \_\_\_\_\_

Sworn to before me this 19 day of July, 2013

  
Notary Public

ROBERT GUERRERO  
Notary Public, State of New York  
No. -4787428  
Qualified in Queens County  
Certificate Filed in New York and Nassau Counties  
Commission Expires Oct 31, 2013  
NEW YORK CITY BUILDING AND CONSTRUCTION TRADES COUNCIL  
13

### 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.

**VENDEX COMPLIANCE**

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

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

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

Name of Bidder: BDE INDUSTRIES INC  
Bidder's Address: 40-49, 72 ST, WOODSIDE, NY 11377  
Bidder's Telephone Number: 718-429-1648  
Bidder's Fax Number: 718-429-7442  
Date of Bid Opening: 6/10/13.  
Project ID: HH12WBAR

**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, 9<sup>th</sup> Floor, New York, New York 10007.

Date of Submission: \_\_\_\_\_

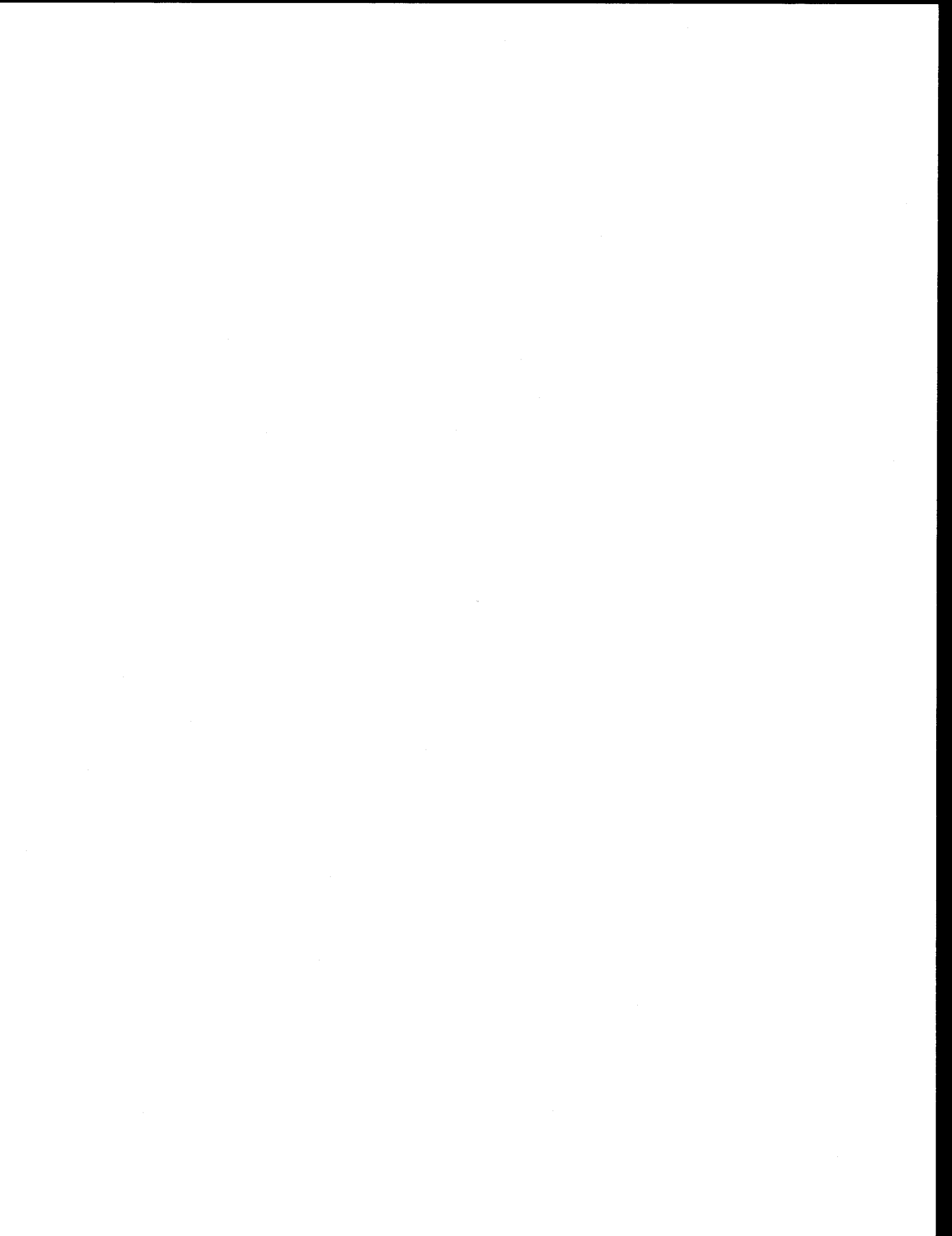
By: \_\_\_\_\_  
(Signature of Partner or corporate officer)

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: PANKAS KUMAR.





# Certificate of No Change Form



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

I, PANKAS KUMAR., 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: BQE INDUSTRIES INC

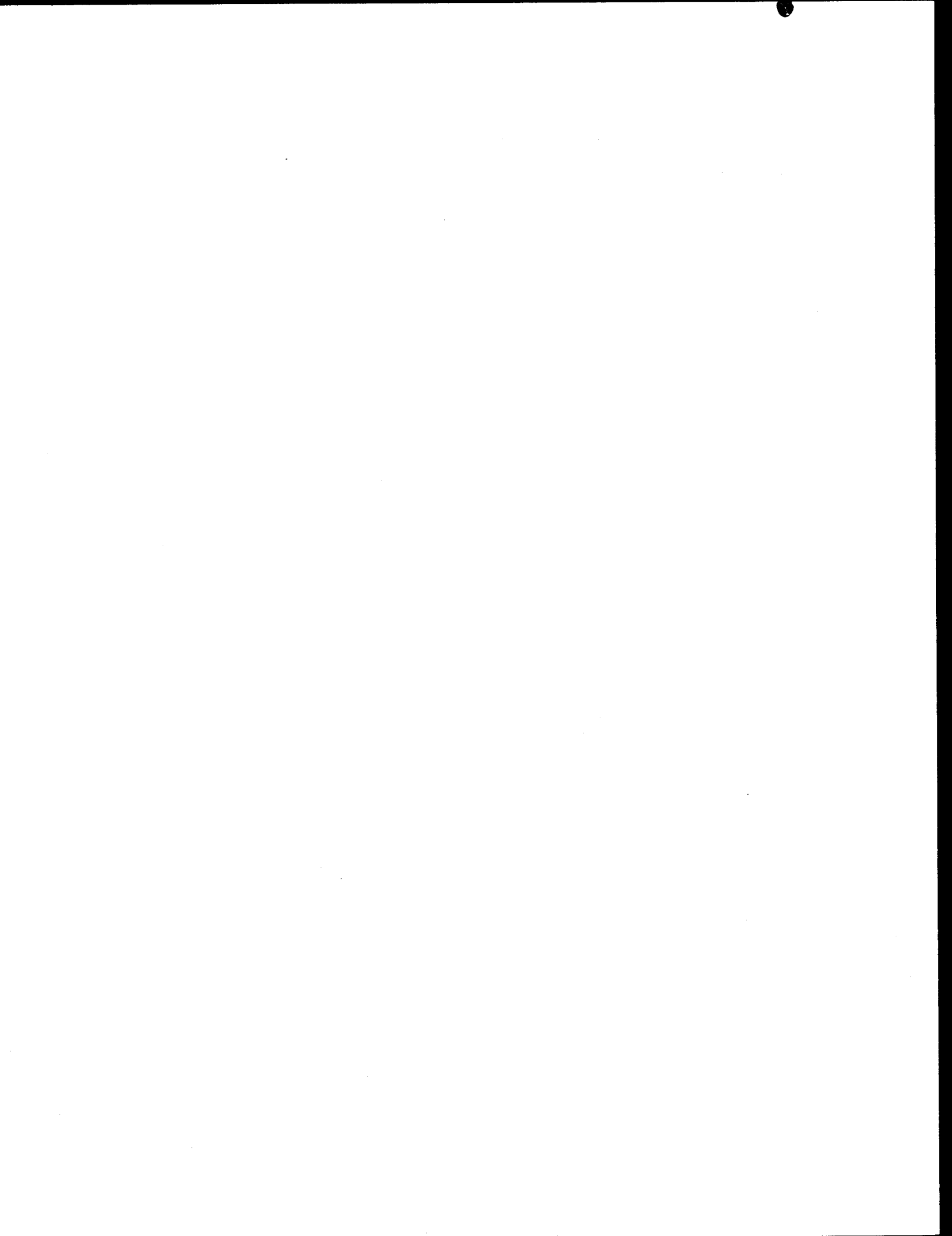
Vendor's Address: 40-49, 72 STREET, WOODSIDE, NY 11377.

Vendor's EIN or TIN: 11-3181881 Requesting Agency: NYC DDC

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: 8/20/2012

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	PANKAS KUMAR.	8/20/2012	
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:

PANKAS KUMAR

Name (Print)

PRESIDENT

Title

BRE INDUSTRIES INC

Name of Submitting Entity

Signature

6/06/13

Date

Notarized By:

Notary Public

ROBERT GUERRERO  
Notary Public State of New York  
No. 47082  
Qualified in Queens County  
Certificate Filed in New York and Nassau Counties  
Commission Expires Oct. 31, 2013

4787728  
License Number

Sworn to before me on:

06/06/2013  
Date



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?  
NEW YORK. 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. 11-3181881 info@bgeindustries.org  
Employer Identification Number or Federal Tax I.D./ Email Address
6. BGE INDUSTRIES INC  
Company Name
7. 40-49 72 STREET, WOODSIDE, NY 11377.  
Company Address and Zip Code
8. PANKAS KUMAR. 718-429-1648.  
Chief Operating Officer Telephone Number
9. Same  
Designated Equal Opportunity Compliance Officer Telephone Number  
(If same as Item #7, write "same")
10. Same  
Name of Prime Contractor and Contact Person  
(If same as Item #5, write "same")
11. Number of employees in your company: 16



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.

NO (a) Health benefit coverage/description(s) for all management, nonunion and union employees (whether company or union administered)

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

NO (c) Employee Policy/Handbook

NO (d) Personnel Policy/Manual

NO (e) Supervisor's Policy/Manual

NO (f) Pension plan or 401k coverage/description for all management, nonunion and union employees, whether company or union administered

NO (g) Collective bargaining agreement(s).

YES (h) Employment Application(s)

NO (i) Employee evaluation policy/form(s).

NO (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.

40-49, 72 ST  
WOODSIDE, NY 11377

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).

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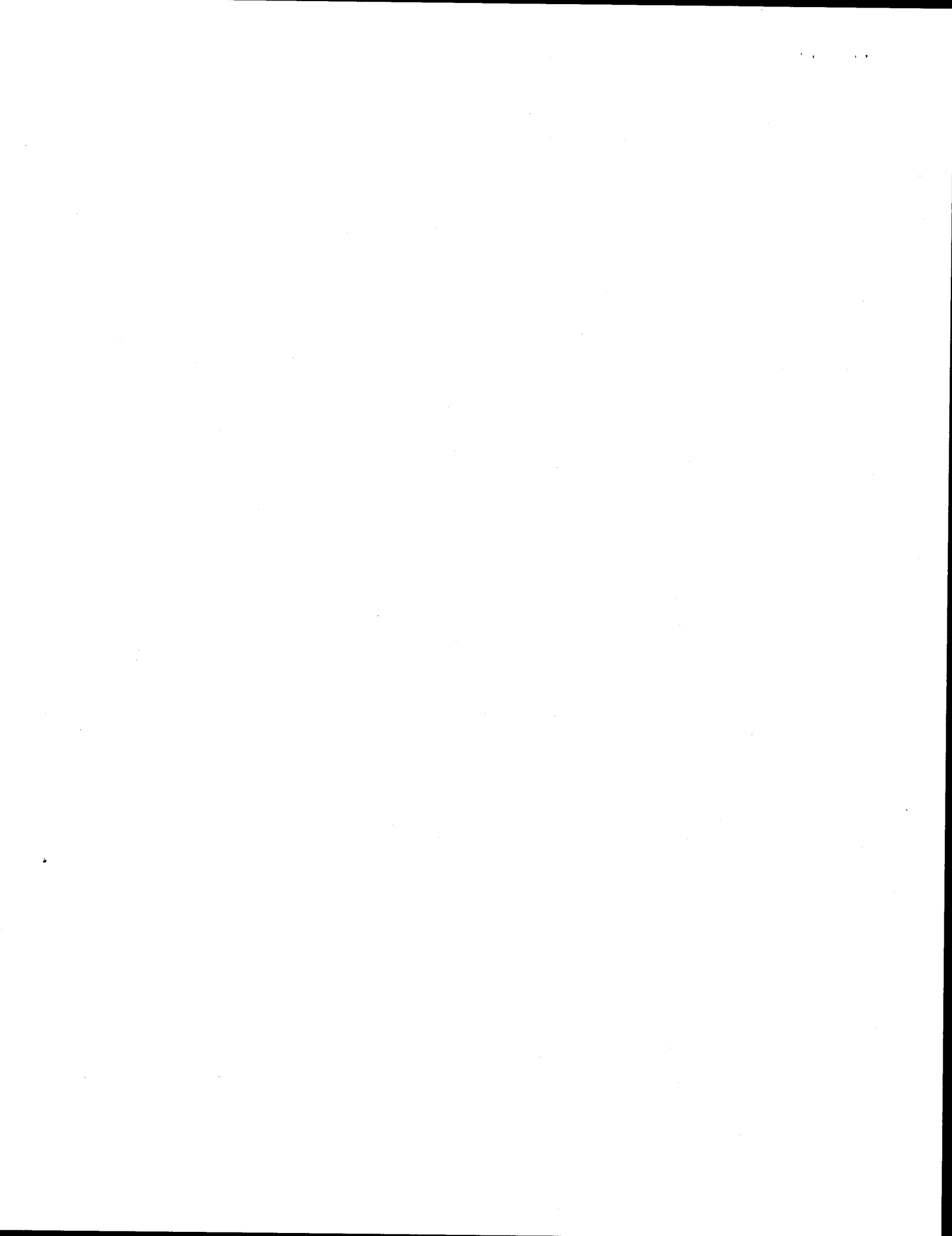
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28. Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes\_\_\_ No

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) PANKAS KUMAR. 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.

BQE INDUSTRIES INC  
 Contractor's Name

PANKAS KUMAR PRESIDENT  
 Name of person who prepared this Employment Report Title

PANKAS KUMAR PRESIDENT  
 Name of official authorized to sign on behalf of the contractor Title

718-429-1648  
 Telephone Number

[Signature] 7/11/13.  
 Signature of authorized official Date

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

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

Willful or fraudulent falsifications of any data or information submitted herewith may result in the termination of the contract between the City and the bidder or contractor and in disapproval of future contracts for a period of up to five years. Further, such falsification may result in civil and/or 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 11<sup>th</sup> day of July 2013.

[Signature] ROBERT GUERRERO. 07/11/13  
 Notary Public Authorized Signature Date

ROBERT GUERRERO  
 Notary Public, State of New York  
 No. -4787428  
 Qualified in Queens County  
 Certificate Filed in New York and Nassau Counties  
 Commission Expires Oct. 31, 2013



# BQE INDUSTRIES, INC.

## Employment Application Form

PLEASE PRINT ALL  
INFORMATION REQUESTED  
EXCEPT SIGNATURE

APPLICATION FOR EMPLOYMENT

APPLICANTS MAY BE TESTED FOR ILLEGAL DRUGS

PLEASE COMPLETE PAGES 1-4.

DATE \_\_\_\_\_

Name \_\_\_\_\_  
Last First Middle Maiden

Present address \_\_\_\_\_  
Number Street City State Zip

How long \_\_\_\_\_ Social Security No. \_\_\_\_\_

Telephone ( ) \_\_\_\_\_

If under 18, please list age \_\_\_\_\_

Position applied for (1) \_\_\_\_\_  
 and salary desired (2) \_\_\_\_\_  
 (Be specific)

Days/hours available to work  
 No Pref \_\_\_\_\_ Thur \_\_\_\_\_  
 Mon \_\_\_\_\_ Fri \_\_\_\_\_  
 Tue \_\_\_\_\_ Sat \_\_\_\_\_  
 Wed \_\_\_\_\_ Sun \_\_\_\_\_

How many hours can you work weekly? \_\_\_\_\_ Can you work nights? \_\_\_\_\_

Employment desired  FULL-TIME ONLY  PART-TIME ONLY  FULL- OR PART-TIME

When available for work? \_\_\_\_\_

TYPE OF SCHOOL	NAME OF SCHOOL	LOCATION (Complete mailing address)	NUMBER OF YEARS COMPLETED	MAJOR & DEGREE
High School				
College				
Bus. or Trade School				
Professional School				

HAVE YOU EVER BEEN CONVICTED OF A CRIME?  No  Yes

If yes, explain number of conviction(s), nature of offense(s) leading to conviction(s), how recently such offense(s) was/were committed, sentence(s) imposed, and type(s) of rehabilitation. \_\_\_\_\_





**PLEASE PRINT ALL INFORMATION REQUESTED EXCEPT SIGNATURE**

**APPLICATION FOR EMPLOYMENT**

DO YOU HAVE A DRIVER'S LICENSE?  Yes  No

What is your means of transportation to work? \_\_\_\_\_

Driver's license number \_\_\_\_\_ State of issue \_\_\_\_\_ Operator  Commercial (CDL)  Chauffeur

Expiration date: \_\_\_\_\_

Have you had any accidents during the past three years? How many? \_\_\_\_\_

Have you had any moving violations during the past three years? How Many? \_\_\_\_\_

**OFFICE ONLY**

Typing  Yes  No \_\_\_\_\_ WPM

10-key  Yes  No \_\_\_\_\_

Word Processing  Yes  No \_\_\_\_\_ WPM

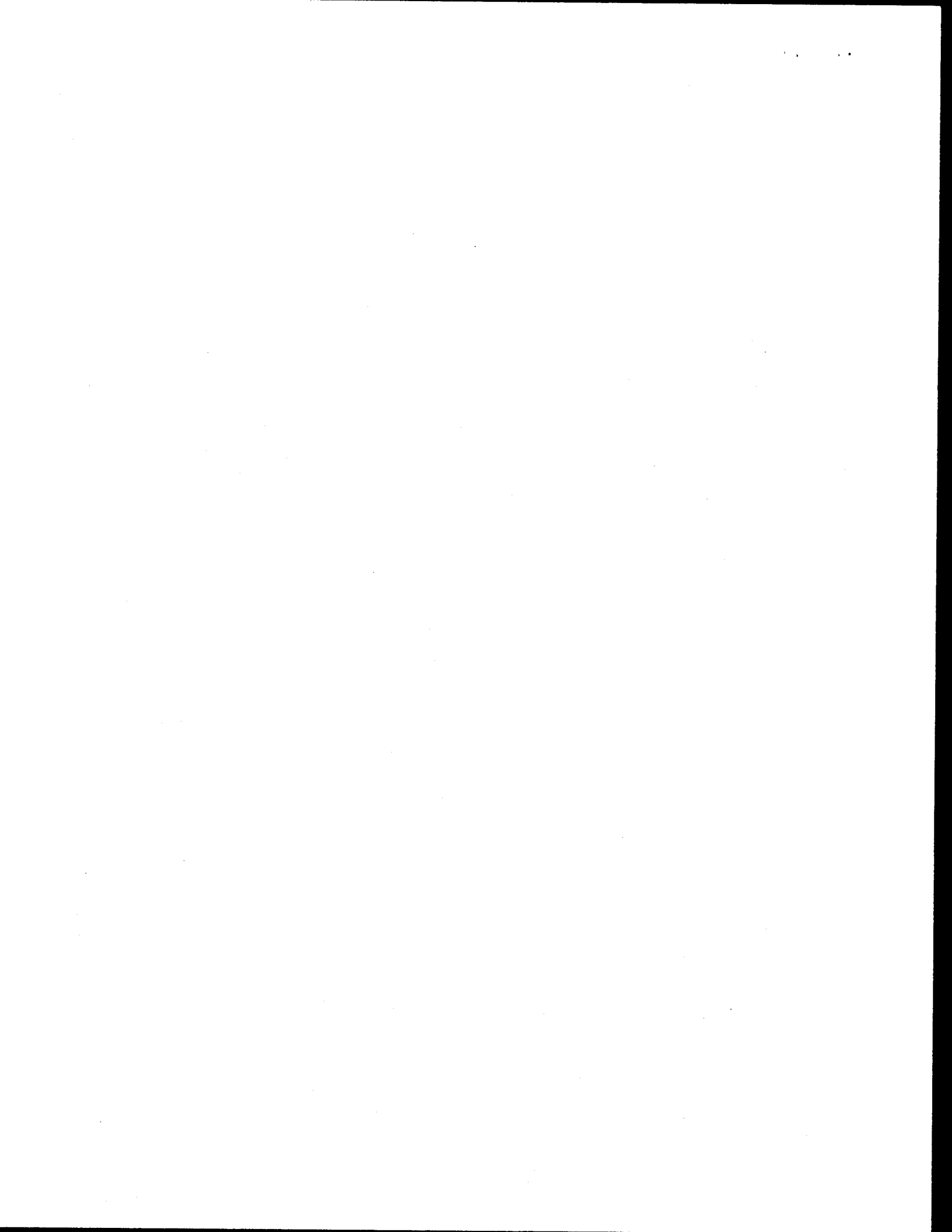
Personal Computer  Yes  No \_\_\_\_\_ PC  Mac \_\_\_\_\_

Other Skills \_\_\_\_\_

Please list two references other than relatives or previous employers.

Name _____	Name _____
Position _____	Position _____
Company _____	Company _____
Address _____	Address _____
Telephone ( ) _____	Telephone ( ) _____

An application form sometimes makes it difficult for an individual to adequately summarize a complete background. Use the space below to summarize any additional information necessary to describe your full qualifications for the specific position for which you are applying.



**PLEASE PRINT ALL  
INFORMATION REQUESTED  
EXCEPT SIGNATURE**

**APPLICATION FOR EMPLOYMENT**

MILITARY

HAVE YOU EVER BEEN IN THE ARMED FORCES?     \_\_ Yes   \_\_ No

ARE YOU NOW A MEMBER OF THE NATIONAL GUARD?     \_\_ Yes   \_\_ No

Specialty \_\_\_\_\_ Date Entered \_\_\_\_\_ Discharge Date \_\_\_\_\_

**Work Experience**     Please list your work experience for the past five years beginning with your most recent job held. If you were self-employed, give firm name. **Attach additional sheets if necessary.**

Name of employer Address City, State, Zip Code Phone number	Name of last supervisor	Employment dates  From To	Pay or salary  Start Final
Your last job title			

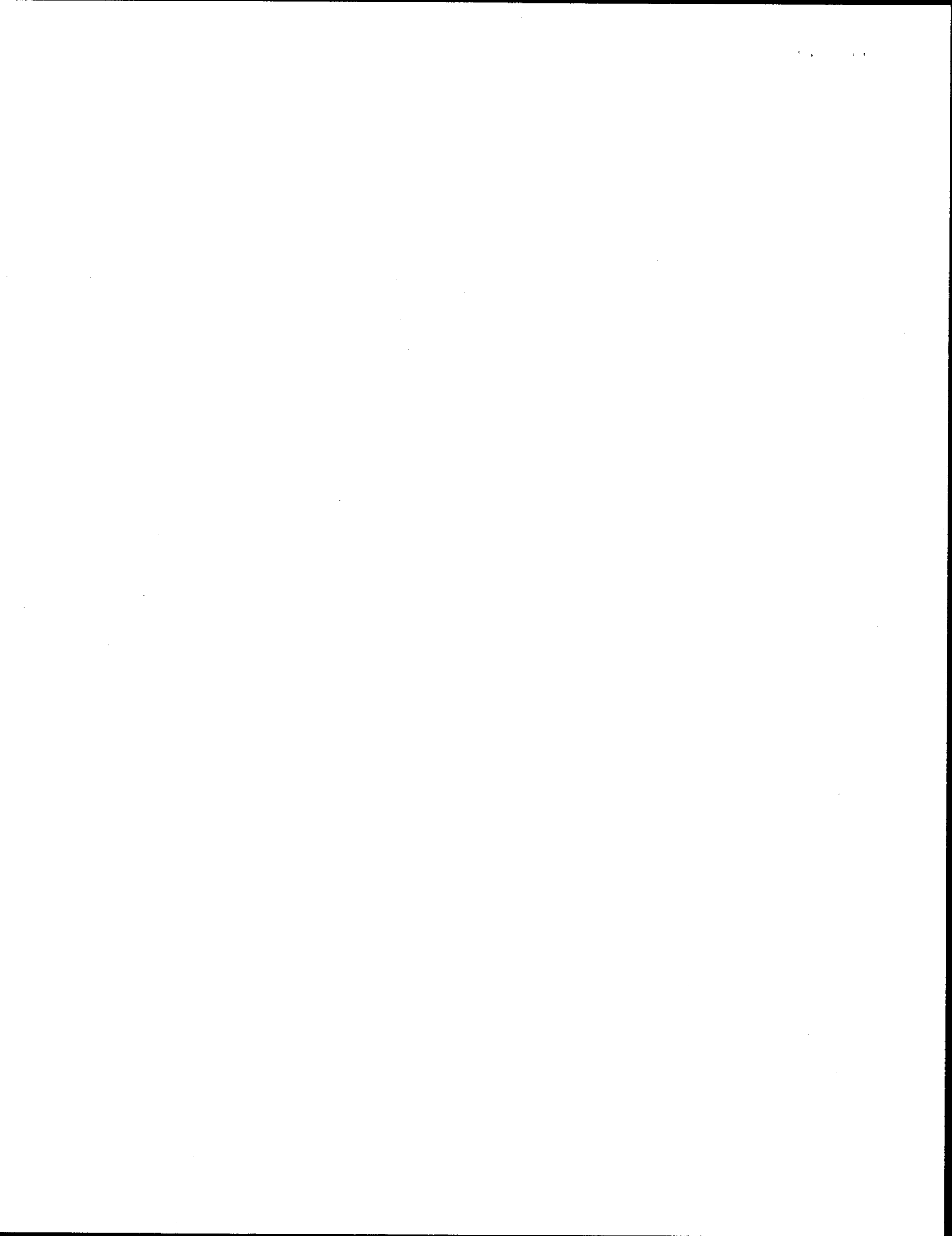
Reason for leaving (be specific)

List the jobs you held, duties performed, skills used or learned, advancements or promotions while you worked at this company.

Name of employer Address City, State, Zip Code Phone number	Name of last supervisor	Employment dates  From To	Pay or salary  Start Final
Your Last Job Title			

Reason for leaving (be specific)

List the jobs you held, duties performed, skills used or learned, advancements or promotions while you worked at this company.



**PLEASE PRINT ALL  
INFORMATION REQUESTED  
EXCEPT SIGNATURE**

--

**APPLICATION FOR EMPLOYMENT**

**Work experience** Please list your work experience for the past five years beginning with your most recent job held. If you were self-employed, give firm name. **Attach additional sheets if necessary.**

Name of employer Address City, State, Zip Code Phone number	Name of last supervisor	Employment dates	Pay or salary
		From	Start
		To	Final
Your last job title			

Reason for leaving (be specific)

List the jobs you held, duties performed, skills used or learned, advancements or promotions while you worked at this company.

Name of employer Address City, State, Zip Code Phone number	Name of last supervisor	Employment dates	Pay or salary
		From	Start
		To	Final
Your last job title			

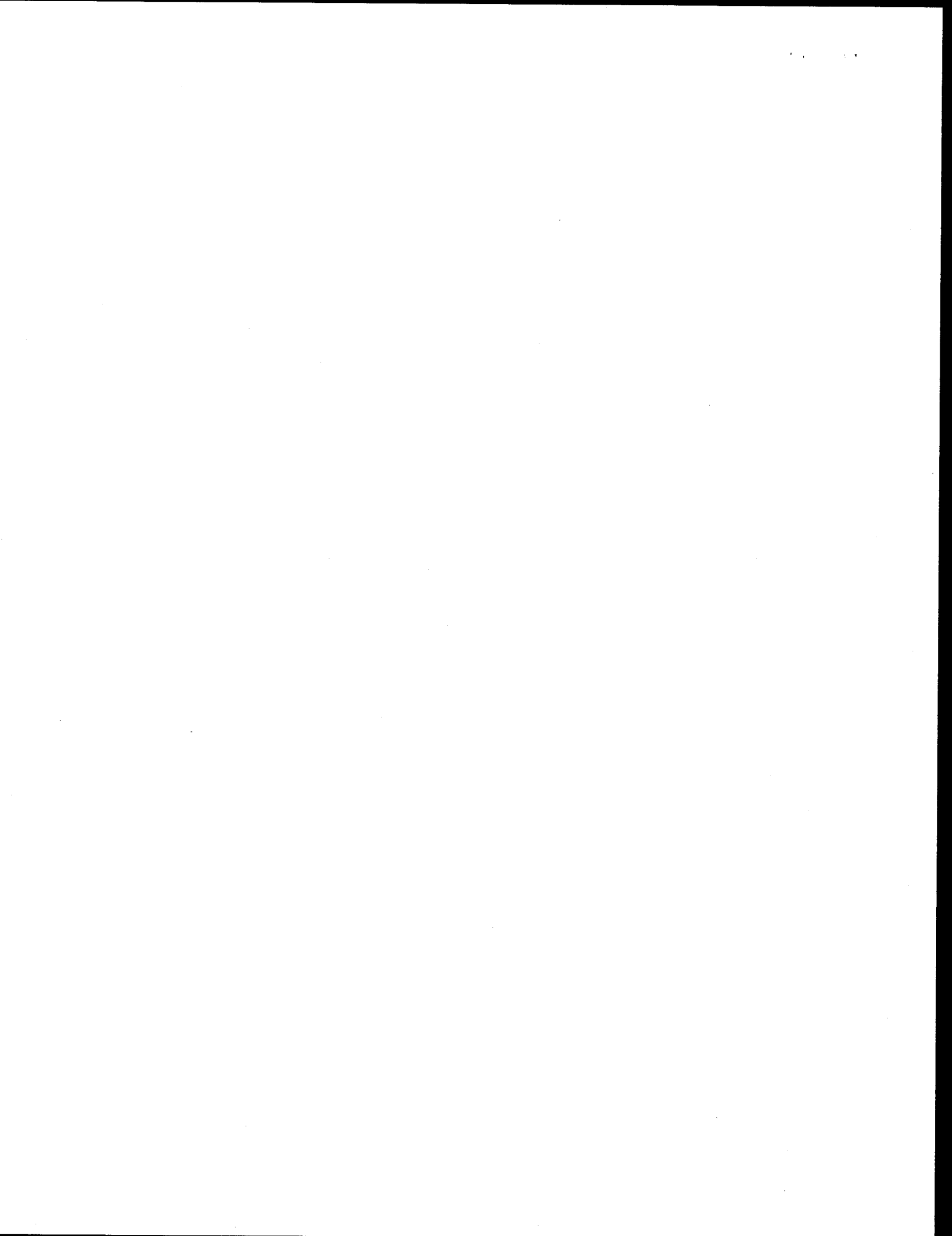
Reason for leaving (be specific)

List the jobs you held, duties performed, skills used or learned, advancements or promotions while you worked at this company.

May we contact your present employer?  Yes  No

Did you complete this application yourself  Yes  No

If not, who did? \_\_\_\_\_





**BQE INDUSTRIES, INC.**

General Contractors

**EQUAL EMPLOYMENT OPPORTUNITY STATEMENT**

It is the policy of the BQE Industries Inc not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, marital status, sexual orientation or citizenship status. We will take specific action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, creed, color, national origin, sex, age, disability, marital status, sexual orientation or citizenship status. Such action shall include, but not to be limited to the following:

Recruiting, hiring, compensation, training and apprenticeship, promotion, upgrading, demotion, downgrading transfer, layoff and termination and all other terms and conditions of employment except as provided by law.

Pankas Kumar has been appointed Director of our equal employment opportunity Programs and will report directly to me on the results of such program.

BQE INDUSTRIES INC

\_\_\_\_\_  
Company Name

PANKAS KUMAR      PRESIDENT

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Signature

8/20/2012

\_\_\_\_\_  
Date





**STATE OF NEW YORK  
WORKERS' COMPENSATION BOARD  
CERTIFICATE OF INSURANCE COVERAGE UNDER THE NYS DISABILITY BENEFITS LAW**

**PART 1. To be completed by Disability Benefits Carrier or Licensed Insurance Agent of that Carrier**

<p>1a. Legal Name and Address of Insured (Use street address only)</p> <p><b>BQE INDUSTRIES, INC.</b> 40-49 72<sup>ND</sup> STREET WOODSIDE, N.Y. 11377</p> <p>DBA:</p>	<p>1b. Business Telephone Number of Insured 718-429-1648</p> <p>1c. NYS Unemployment Insurance Employer Registration Number of Insured 7942816</p> <p>1d. Federal Employer Identification Number of Insured or Social Security Number 11 3181881</p>
<p>2. Name and Address of the Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)</p> <p>THE CITY OF NEW YORK DEPARTMENT OF DESIGN AND CONSTRUCTION DIVISION OF STRUCTURES PROJECT ID: PV4667-CSV 30-30 THOMSON AVENUE LONG ISLAND CITY, N.Y. 11101-3045</p>	<p>3a. Name of Insurance Carrier <b>Zurich American Insurance Company</b></p> <p>3b. Policy Number of entity listed in box "1a": 1768696-001</p> <p>3c. Policy effective period: 01/01/13 to 01/01/14</p>

4. Policy covers:

a.  All of the employer's employees eligible under the New York Disability Benefits Law

b.  Only the following class or classes of the employer's employees:

\_\_\_\_\_

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has NYS Disability Benefits insurance coverage as described above.

Date Signed 12/21/2012 By *Rosamund Selten*  
(Signature of insurance carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)

Telephone Number (631) 845-2200 Title Administrative Services Manager

IMPORTANT: If box "4a" is checked, and this form is signed by the insurance carrier's authorized representative or NYS Licensed Insurance Agent of that carrier, this certificate is COMPLETE. Mail it directly to the certificate holder.

If box "4b" is checked, this certificate is NOT COMPLETE for purposes of Section 220, Subd. 8 of the Disability Benefits Law. It must be mailed for completion to the Workers' Compensation Board, DB Plans Acceptance Unit, 20 Park Street, Albany, New York 12207.

**PART 2. To be completed by NYS Workers' Compensation Board (Only if box "4b" of Part 1 has been checked)**

State Of New York  
Workers' Compensation Board

According to information maintained by the NYS Workers' Compensation Board, the above-named employer has complied with the NYS Disability Benefits Law with respect to all of his/her employees.

Date Signed \_\_\_\_\_ By \_\_\_\_\_  
(Signature of NYS Workers' Compensation Board Employee)

Telephone Number \_\_\_\_\_ Title \_\_\_\_\_

Case Note: Only insurance carriers licensed to write NYS disability benefits insurance policies and NYS licensed insurance agents of those insurance carriers are authorized to issue Form DB-120.1. Insurance brokers are NOT authorized to issue this form.



## Additional Instructions for Form DB-120.1

By signing this form, the insurance carrier identified in box "3" on this form is certifying that it is insuring the business referenced in box "1a" for disability benefits under the New York State Disability Benefits Law. The Insurance Carrier or its licensed agent will send this Certificate of Insurance to the entity listed as the certificate holder in box "2". *This Certificate is valid for the earlier of one year after this form is approved by the insurance carrier or its licensed agent, or the policy expiration date listed in box "3c".*

Please Note: Upon the cancellation of the disability benefits policy indicated on this form, if the business continues to be named on a permit, license or contract issued by a certificate holder, the business must provide that certificate holder with a new Certificate of NYS Disability Benefits Coverage or other authorized proof that the business is complying with the mandatory coverage requirements of the New York State Disability Benefits Law.

### DISABILITY BENEFITS LAW

#### §220. Subd. 8

(a) The head of a state or municipal department, board, commission or office authorized or required by law to issue any permit for or in connection with any work involving the employment of employees in employment as defined in this article, and notwithstanding any general or special statute requiring or authorizing the issue of such permits, shall not issue such permit unless proof duly subscribed by an insurance carrier is produced in a form satisfactory to the chair, that the payment of disability benefits for all employees has been secured as provided by this article. Nothing herein, however, shall be construed as creating any liability on the part of such state or municipal department, board, commission or office to pay any disability benefits to any such employee if so employed.

(b) The head of a state or municipal department, board, commission or office authorized or required by law to enter into any contract for or in connection with any work involving the employment of employees in employment as defined in this article, and notwithstanding any general or special statute requiring or authorizing any such contract, shall not enter into any such contract unless proof duly subscribed by an insurance carrier is produced in a form satisfactory to the chair, that the payment of disability benefits for all employees has been secured as provided by this article.



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

May 6, 2013

**ADDENDUM No. # 1**

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

**HH112WBLR**

**Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project**

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 May 15<sup>th</sup>, 2013, at 2:00pm is rescheduled to May 24<sup>th</sup>, 2013, at 2:00pm.

Contract 1 – General Construction Work.

**Contractor/vendors can visit the facilities before Tuesday, May 14<sup>th</sup> 2013 by contacting the Facility Manager for each facility (as listed below).**

**Please call at least 24 hrs. in advance. Provide them the name of the company and person who would visit the facility.**

<b>Charles Gay Keener:</b>	<b>Mr. Lexie Davis (212) 369-8900 x-238 or (646) 772-0217</b>
<b>HELP SEC Facility:</b>	<b>Mr. Roberto Rodriguez: (212) 534-3866 (917) 748-6355 or (212) 534-3866</b>
<b>Clark Thomas:</b>	<b>Mr. Carlos Lopez (347)226-4475 or (917) 748-6455</b>

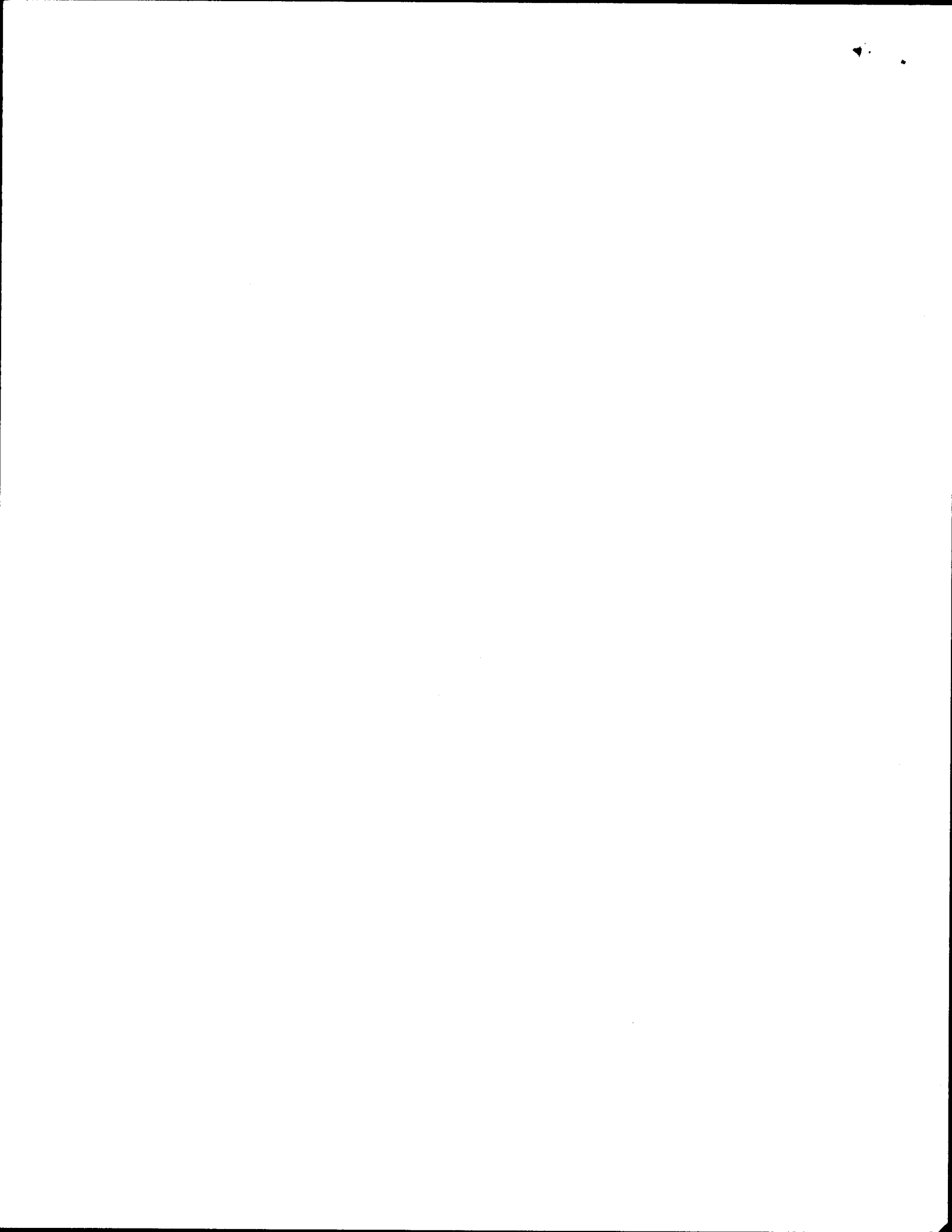
**THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.**

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-2200, (718) 391-1727, or by fax at (718) 391-2615.

  
\_\_\_\_\_  
David Resnick, R.A.  
Deputy Commissioner

**POBE INDUSTRIES INC**  
\_\_\_\_\_  
Name of Bidder

By:   
\_\_\_\_\_



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

May 16, 2013

**ADDENDUM No. # 2**

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

**HH112WBLR**

**Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project**

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

---

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

1. **Questions from Bidders and Responses to Questions:**  
See Attachment A.
2. **Revisions to the Addendum to the General Conditions:**  
See Attachment B.
3. **Revisions to the Specifications:**  
See Attachment C.
4. **Revisions to the Drawings:**  
See Attachment D.
5. **Revisions to the Bid Booklet:**  
Add pages 21-1 thru 21-43 included with this Addendum.

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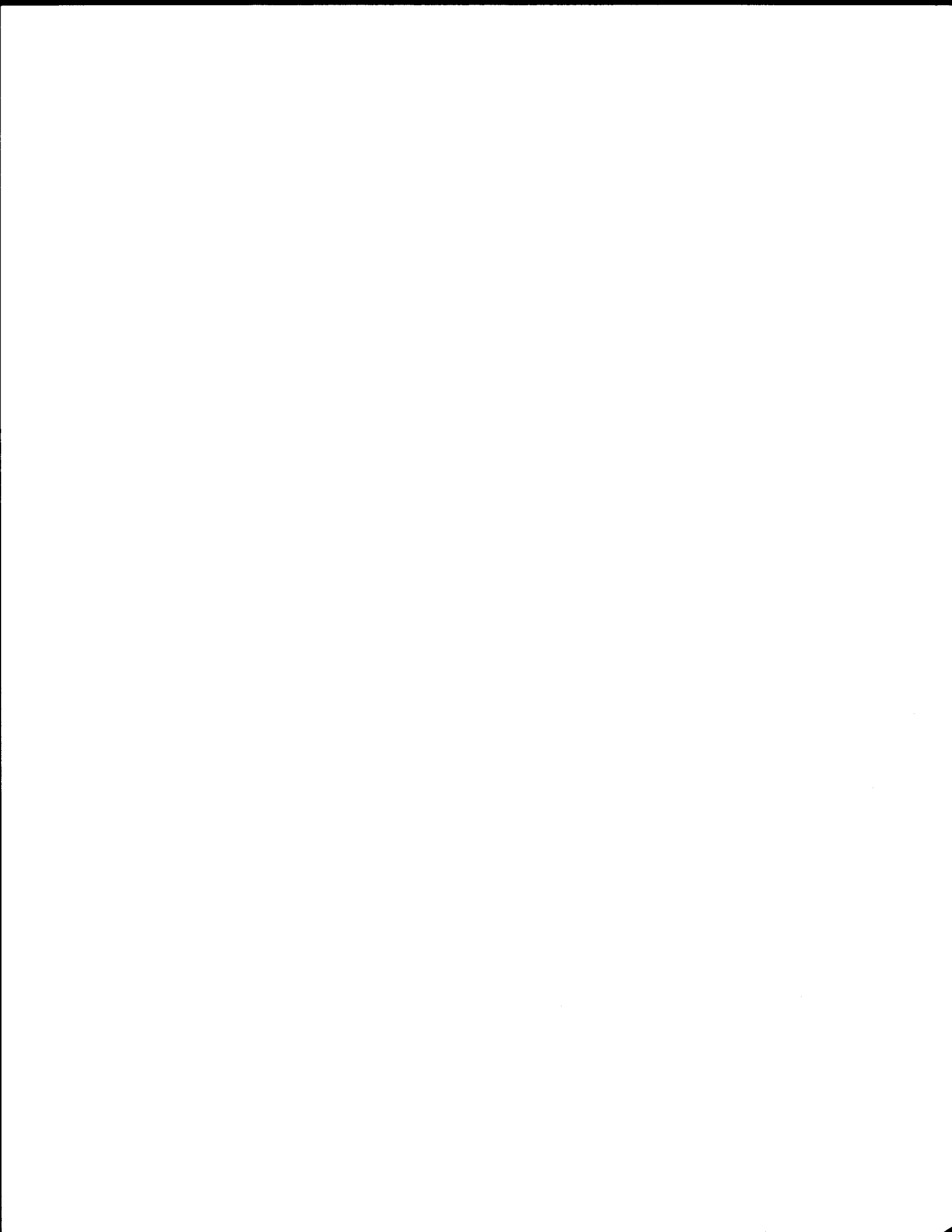
**THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.**

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-2200, (718) 391-1727, or by fax at (718) 391-2615.

  
\_\_\_\_\_  
David Resnick, P.A.  
Deputy Commissioner

BBE INDUSTRIES INC.  
Name of Bidder

By: 





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

May 31, 2013

**ADDENDUM No. # 3**

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

**HH112WBLR**

**Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project**

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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.

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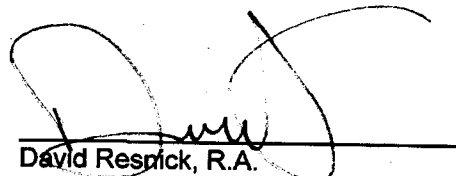
The bidder is advised that the items listed below apply to the project:

1. **Revised Bid Opening Date:**  
The Bid Opening for the Contract described below scheduled for June 6<sup>th</sup>, 2013, at 2:00pm is rescheduled to June 10<sup>th</sup>, 2013, at 2:00pm.  
Contract 1 – General Construction Work.
2. **Questions from Bidders and Responses to Questions:**  
See Attachment A.
3. **Revisions to the Drawings:**  
See Attachment B.
4. **Revisions to the Bid Booklet:**  
Delete pages 21-8, 21-21 & 21-35 and replace with 21-8R, 21-21R & 21-35R, included with this Addendum.

---

**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) 391-1727, or by fax at (718) 391-2615.

  
\_\_\_\_\_  
David Respick, R.A.  
Deputy Commissioner

BQE INDUSTRIES INC  
Name of Bidder

By:  \_\_\_\_\_



## **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](http://www.nyc.gov/nycbusiness) to learn more about the loan or contact [constructionloan@sbs.nyc.gov](mailto: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: HH112WBLR**  
**CITY OF NEW YORK**  
**DEPARTMENT OF DESIGN AND CONSTRUCTION**  
**DIVISION OF STRUCTURES**

**BID BOOKLET**

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

**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)
- MWBE Subcontractor 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)

**FAILURE TO SUBMIT THE SEVEN 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 additional information is required, please contact DDC at 718-391-2601.
  - (3) **VENDEX QUESTIONNAIRES:** Vendex Questionnaires, as well as detailed instructions, may be obtained at [www.nyc.gov/vendex](http://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 Notice to Bidders – Proprietary Items

- A. General: A proprietary item required for the Project is specified below. The contractor is required to provide and install such proprietary item. The Contractor must provide the specified item from the designated manufacturer. Substitutions are not permissible and will not be approved. More detailed information regarding the item is set forth in the Specifications. Such information includes item description, as well as requirements for installation and related materials.
- B. Payment: For the required proprietary item, an allowance amount is indicated. The allowance provides a stipulated amount to reimburse the Contractor for the purchase of the proprietary item from the designated manufacturer. Payment from the allowance shall be limited to the purchase price of the specified proprietary item and shall exclude any costs above and beyond the purchase price. Payment from the allowance shall not include any of the following costs with respect to the specified proprietary item: (1) any mark-up for the Contractor's overhead and profit, (2) any costs for transportation, including delivery, shipping or special handling costs, (3) any costs for installation, and (4) any costs for related materials. Payment for the specified proprietary item shall be based on the invoice actually provided by the manufacturer.
- C. Bid Form: A total allowance amount for the purchase of all required proprietary items is set forth on the Bid Form. In preparing the lump sum portion of its bid, the Contractor shall:
- (1) Exclude from its bid any costs for the purchase of the proprietary items, and
  - (2) Include in its bid any costs above and beyond the purchase price, including without limitation, costs for transportation, delivery, installation, related materials and overhead.
- D. Required Proprietary Item(s):

### GENERAL CONSTRUCTION CONTRACT NO. 1:

- |                        |  |
|------------------------|--|
| 1. Proprietary Item:   | Fire Alarm Devices   |
| Specification Section: | 266003 - Fire Protective Alarm System  |
| Manufacturer:          | Fire Com Life Safety Net 2000<br>Fire Vac 7200<br>Edward's System Technology III |
| Allowance Amount:      | Not to Exceed \$23,000.  |

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## SPECIAL EXPERIENCE REQUIREMENTS

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

General Construction Contractor                        X      YES                                NO

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

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## Qualification Form

Project ID: HH112WBLR

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

### SUBCONTRACTOR UTILIZATION PLAN

**Schedule B: Subcontractor Utilization Plan:** Schedule B: Subcontractor Utilization Plan for this Contract is set forth on the following pages of this Bid Booklet. Schedule B: Subcontractor 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 Schedule B: Subcontractor Utilization Plan (Part II) with its bid.

**Contract Provisions:** Contract provisions regarding the participation of the MWBE firms are set forth in Article 77 of the Contract. The bidder is advised to review these contract provisions.

**Waiver:** The bidder may seek a full or partial pre-award waiver of the Target Subcontracting Percentage in accordance with Article 77 of the Contract (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 Target Subcontracting Percentage is set forth in Schedule B: Subcontractor Utilization Plan (Part III).

**Rejection of the Bid:** The bidder must complete Schedule B: Subcontractor Utilization Plan (Part II) set forth on the following pages. Subcontractor Utilization Plans which do not include the required affirmations (on Page 2) will be deemed to be non-responsive, unless a full waiver of the Target Subcontracting Percentage is granted (Schedule B: Subcontractor Utilization Plan, Part III). In the event that the City determines that the bidder has submitted a Schedule B: 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 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 plan 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 goals have been established for the participation of M/WBE's, 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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Tax ID #: \_\_\_\_\_

PIN#: 8502013HL0004C



Contract # 1 - General Construction Work

The City of New York

**SCHEDULE B - Subcontractor Utilization Plan -Part I: Agency's Target**

This page to be completed by contracting agency

**Contract Overview**

Pin # 8502013HL0004C FMS Project ID#: HH112WBLR

Project Title Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project

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)

Clark Thomas Building: consists of the demolition and removal of the abandoned steam laundry equipment and piping located in the basement of the Clark Thomas Building; New construction will consist of two (2) new rooms in the basement and the installation of a new fuel oil tank, fuel oil pumps, two (2) new dual fuel low pressure steam boilers and associated piping, ancillary equipment, louvers, and flues. Contract work will also include the connection to the existing steam supply and condensate return main piping in the building's basement and the installation of any/all related electrical, plumbing, and sprinkler systems.

HELP SEC and Keener Buildings: consists of the installation of one (1) new prefabricated mechanical room building at both the HELP SEC and Keener Building sites. Each building will have a room for fuel oil tanks and a room for boilers. Each building will also contain two (2) fuel oil tanks, fuel oil pumps, two (2) dual fuel low pressure steam boilers, exhaust fans, louvers, boiler control panels, steam and condensate piping, electrical and fire alarm conduits and wiring, plumbing piping, and sprinklers. Contract work will also consist of the installation of utilities piping from the prefabricated building locations to the locations of the existing HELP SEC and Keener incoming services, and connections to existing building utilities.

(1)  **Target Subcontracting Percentage**  
 Percentage of total contract dollar value that agency estimates will be awarded to subcontractors in amounts under \$1 million for construction and professional services. 10 %

**Subcontractor Participation Goals**  
Complete and enter total for each Construction or Professional Services, or both (if applicable)

Group	Construction	Professional Services
Black American	Unspecified %	%
Hispanic American	Unspecified %	%
Asian American	Unspecified %	No Goal
Caucasian Female	No Goal	%
<b>Total Participation Goals</b>	<b>(2) 31 %</b>	<b>(3) %</b>

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

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Tax ID #: \_\_\_\_\_

PIN#: \_\_\_\_\_

### SCHEDULE B - Subcontractor Utilization Plan - Part II: Bidder/Proposer Subcontracting Plan

page and the next (Part II herein) are to be completed by the bidder/proposer. **AFFIRMATIONS; Bidder/proposer must check applicable boxes below, affirming compliance with M/WBE requirements.**

Bidder/proposer  AFFIRMS or  DOES NOT AFFIRM [statement below]

It is a material term of the contract to be awarded that, with respect to the total amount of the contract to be awarded, bidder/proposer will award one or more subcontracts for amounts under one million dollars, sufficient to meet or exceed the Target Subcontracting Percentage (as set forth in Part I) unless it obtains a full or partial waiver thereof, and it will award subcontracts sufficient to meet or exceed the Total Participation Goals (as set forth in Part I) unless such goals are modified by the Agency.

- Bidder/proposer  AFFIRMS that it intends to meet or exceed the Target Subcontracting Percentage (as set forth in Part I); or
- AFFIRMS that it has obtained a full/partial pre-award waiver of the Target Subcontracting Percentage (as set forth in Part I) and intends to award the modified Target Subcontracting Percentage, if any; or
- DOES NOT AFFIRM

#### Section I: Prime Contractor Contact Information

Tax ID # \_\_\_\_\_ FMS Vendor ID # \_\_\_\_\_

Business Name \_\_\_\_\_ Contact Person \_\_\_\_\_

Address \_\_\_\_\_

Telephone # \_\_\_\_\_ Email \_\_\_\_\_

#### Section II: General Contract Information

1. Define the industry in which work is to be performed.
- Construction includes all contracts for the construction, rehabilitation, and/or renovation of physical structures. This category does include CM Build as well as other construction related services such as: demolition, asbestos and lead abatement, and painting services, carpentry services, carpet installation and removal, where related to new construction and not maintenance.
  - Professional Services are a class of services that typically require the provider to have some specialized field or advanced degree. Services of this type include: legal, management consulting, information technology, accounting, auditing, actuarial, advertising, health services, pure construction management, environmental analysis, scientific testing, architecture and engineering, and traffic studies, and similar services.

- a. Type of work on Prime Contract (Check one):  Construction  Professional Services
- b. Type of work on Subcontract (Check all that apply):  Construction  Professional Services  Other

2. What is the expected percentage of the total contract dollar value that you expect to award to all subcontracts? \_\_\_\_\_ %
3. Will you award subcontract(s) in amounts below \$ 1 million for construction and/or professional services contracts within the first 12 months of the notice to proceed on the contract?  Yes  No

#### Section III: Subcontractor Utilization Summary

**IMPORTANT: If you do not anticipate that you will subcontract at the target level the agency has specified, because you will perform more of the work yourself, you must seek a waiver of the Target Subcontracting Percentage by completing p. 9).**

Step 1:	Subcontracts under \$1M (4) (construction/professional services)	Total Bid/Proposal Value	Calculated Target Subcontracting Percentage
Calculate the percentage (of your total bid) that will go towards subcontracts under \$1M for construction and/or professional services	\$ _____	\$ _____	_____ %
		÷	× 100 =

- Subcontracts under \$1M (construction/professional services):** Enter the value you expect to award to subcontractors in dollars for amounts under \$1 million for construction and/or professional services. This value defines the amount that participation goals apply to, and will be entered into the first line of Step 2.
- Total Bid/Proposal Value:** Provide the dollar amount of the bid/proposal.
- Calculated Target Subcontracting Percentage:** The percentage of the total contract dollar value that will be awarded to one or more subcontractors for amounts under \$1 million for construction and/or professional services. This percentage must equal or exceed the percentage listed by the agency on page 1, at line (1).

**E: The "Calculated Target Subcontracting Percentage" MUST equal or exceed the Target Subcontracting Percentage listed by the agency on Page 6, Line (1).**

Tax ID #: \_\_\_\_\_

PIN#: \_\_\_\_\_

**SCHEDULE B - cont.**

**Step 2:**

Calculate value of subcontractor participation goals

**Subcontracts under \$1M**  
(construction/professional services)

a. Copy value from Step 1, line (4) – the total value of all expected subcontracts under \$1M for construction and/or professional services

\$ \_\_\_\_\_

b. \* From line a. above, allocate the dollar value of "Subcontracts under \$1M" by Construction and Professional Services,

**Construction**

**Professional Services**

\* If all subcontracts under \$1M are in one industry, enter '0' for the industry with no subcontracts.

\* Amounts listed on these lines should add up to the value from line a.

**Subcontracts under \$1M by Industry** \$ \_\_\_\_\_

\$ \_\_\_\_\_

\* For Construction enter percentage from line (2) from Page 6.

\* For Professional Services enter percentage from line (3) from Page 6.

c. \* **Total Participation Goals Percentages must be copied from Part I, lines (2) and (3).**

**Total Participation Goals** x \_\_\_\_\_ %

x \_\_\_\_\_ %

d. **Value of Total Participation Goals** \$ \_\_\_\_\_

\$ \_\_\_\_\_

**Step 3:**

**Subcontracts in Amounts Under \$1 M Scope of Work – Construction**

Enter brief description of type(s) of subcontracts in amounts under \$1M anticipated, by type of work, not by name of subcontractor

**Subcontracts in Amounts Under \$1 M Scope of Work – Professional Services**

Enter brief description of type(s) of subcontracts in amounts under \$1M anticipated, by type of work, not by name of subcontractor

**Section IV: Vendor Certification and Required Affirmations**

I hereby 1) acknowledge my understanding of the M/WBE requirements as set forth herein and the pertinent provisions of Local Law 129 of 2005, and the rules promulgated thereunder; 2) affirm that the information supplied in support of this subcontractor utilization plan is true and correct; 3) agree, if awarded this Contract, to comply with the M/WBE requirements of this Contract and the pertinent provisions of Local Law 129 of 2005, 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 subcontract(s) sufficient to meet the Target Subcontracting Percentage, unless a waiver is obtained, and the Vendor will award subcontract(s) sufficient to meet the Total Participation Goals unless such goals are modified by the Agency; and 5) agree and affirm, if awarded this contract the Vendor intends to make all reasonable, good faith efforts to meet the Target Subcontracting Percentage, or if the Vendor has obtained a waiver, the Vendor intends to meet the modified Target Subcontracting Percentage, if any, and the Vendor intends to solicit and obtain the participation of M/WBEs so as to meet the Total Participation Goals unless modified by the Agency.

Signature \_\_\_\_\_ Date \_\_\_\_\_  
Print Name \_\_\_\_\_ Title \_\_\_\_\_

Tax ID #: \_\_\_\_\_

PIN#: \_\_\_\_\_

### SCHEDULE B

#### PART III - REQUEST FOR WAIVER OF TARGET SUBCONTRACTING PERCENTAGE

##### Contract Overview

Tax ID # \_\_\_\_\_ FMS Vendor ID # \_\_\_\_\_  
 Business Name \_\_\_\_\_  
 Contact Name \_\_\_\_\_ Telephone # \_\_\_\_\_ Email \_\_\_\_\_  
 Type of Procurement  Competitive Sealed Bids  Other Bid/Response Due Date \_\_\_\_\_

PIN # (for this procurement) \_\_\_\_\_ Type of work on Prime Contract \_\_\_\_\_ Type of work on Subcontract (Check all that apply):  
 (Check one):  
 Construction  Other  
 Professional Services  Professional Services

**SUBCONTRACTING** as described in bid/solicitation documents (Copy this % figure from Subcontractor Utilization Plan, Part I), in \_\_\_\_\_ % of the total contract value anticipated by the agency to be subcontracted for construction/professional services subcontracts valued below \$1 million (each)

**ACTUAL SUBCONTRACTING** as anticipated by vendor seeking waiver \_\_\_\_\_ % of the total contract value anticipated in good faith by the bidder/proposer to be subcontracted for construction/ professional services subcontracts valued below \$1 million (each)

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

- Vendor does not subcontract construction/professional services, and has the capacity and good faith intention to perform all such work itself.
- Vendor subcontracts some of this type of work but at lower % than bid/solicitation describes, and has the capacity and good faith intention to do so on this contract.
- Other \_\_\_\_\_

##### References

List 3 most recent contracts/subcontracts performed for NYC agencies (if any)

CONTRACT NO. _____	AGENCY _____	DATE COMPLETED _____
CONTRACT NO. _____	AGENCY _____	DATE COMPLETED _____
CONTRACT NO. _____	AGENCY _____	DATE COMPLETED _____

List 3 most recent contracts/subcontracts performed for other agencies/entities (complete ONLY if vendor has performed fewer than 3 NYC contracts)

TYPE OF WORK _____	AGENCY/ENTITY _____	DATE COMPLETED _____
Manager at agency/entity that hired vendor (Name/Phone No.) _____		
TYPE OF WORK _____	AGENCY/ENTITY _____	DATE COMPLETED _____
Manager at agency/entity that hired vendor (Name/Phone No.) _____		
TYPE OF WORK _____	AGENCY/ENTITY _____	DATE COMPLETED _____
Manager at agency/entity that hired vendor (Name/Phone No.) _____		

**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

##### AGENCY CHIEF CONTACTING OFFICER APPROVAL

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

##### CITY CHIEF PROCUREMENT OFFICER APPROVAL

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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

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

**PROJECT ID: HH112WBLR**

**Installation of New Central Boiler Plant and Fuel Tanks for Wards Island  
Project  
Clarks Thomas Building, HELP SEC Building, Keener Building, Wards Islar  
Manhattan 10035**

Name of Bidder: \_\_\_\_\_

Date of Bid Opening: \_\_\_\_\_

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

Place of Business of Bidder: \_\_\_\_\_

Bidder's Telephone Number: \_\_\_\_\_ Bidder's Fax Number: \_\_\_\_\_

Bidder's Email Address: \_\_\_\_\_

Residence of Bidder (If Individual): \_\_\_\_\_

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

Names of Partners

Residence of Partners


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

Organized under the laws of the State of \_\_\_\_\_

Name and Home Address of President: \_\_\_\_\_

Name and Home Address of Secretary: \_\_\_\_\_

Name and Home Address of Treasurer: \_\_\_\_\_

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## BID FORM

---

The above-named Bidder affirms and declares:

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

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

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

6. Compliance Report

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

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

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

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

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

**BID FORM**

**PROJECT ID: HH112WBLR**

**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 Labor	Total Price for Material Sold and Delivered	Total Price for Item A
\$ _____	\$ _____	\$ _____

B. **ALLOWANCE** for Incidental Asbestos Abatement (Section 028013 of the Specifications) \$45,000.00

C. **AMOUNT** for Proprietary Items (page 2a) \$23,000.00

TOTAL BID PRICE (Add A + B + C)  
( a/k/a BID PROPOSAL) \$ \_\_\_\_\_

**BIDDER'S SIGNATURE AND AFFIDAVIT**

**WARNING!!** Failure to comply with items below will result in the rejection of your bid.

\* **SUBCONTRACTORS:** You MUST complete and submit the form entitled "Bidder's Identification of Subcontractors" (See 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

\* **MWBE GOALS:** You MUST complete and submit the Affirmations contained in the Subcontractor Utilization Plan (See Page 7), or a pre-approved waiver (See Page 9), at the time you submit your bid. You must submit the Affirmations (or a pre-approved waiver) in BID ENVELOPE #1.

Bidder: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature of Partner or corporate officer)

Attest: \_\_\_\_\_  
(Corporate Seal) Secretary of Corporate Bidder

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

**THIS PAGE INTENTIONALLY LEFT BLANK**

**BID FORM (TO BE NOTARIZED)**

\*\*\*\*\*

**AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL**

STATE OF NEW YORK, COUNTY OF \_\_\_\_\_ ss:  
\_\_\_\_\_ being duly sworn says:

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

\_\_\_\_\_  
(Signature of the person who signed the Bid)

Subscribed and sworn to before me this  
\_\_\_\_\_ day of \_\_\_\_\_,

\_\_\_\_\_  
Notary Public

\*\*\*\*\*

**AFFIDAVIT WHERE BIDDERS IS A PARTNERSHIP**

STATE OF NEW YORK, COUNTY OF \_\_\_\_\_ ss:  
\_\_\_\_\_ being duly sworn says:

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

\_\_\_\_\_  
(Signature of Partner who signed the Bid)

Subscribed and sworn to before me this  
\_\_\_\_\_ day of \_\_\_\_\_,

\_\_\_\_\_  
Notary Public

\*\*\*\*\*

**AFFIDAVIT WHERE BIDDERS IS A CORPORATION**

STATE OF NEW YORK, COUNTY OF \_\_\_\_\_ ss:  
\_\_\_\_\_ being duly sworn says:

I am the \_\_\_\_\_ of the above named corporation whose name is subscribed to and which executed  
the foregoing bid. I reside at \_\_\_\_\_  
I have knowledge of the several matters therein stated, and they are in all respects true.

\_\_\_\_\_  
(Signature of Corporate Officer who signed the Bid)

Subscribed and sworn to before me this  
\_\_\_\_\_ day of \_\_\_\_\_,

\_\_\_\_\_  
Notary Public

## AFFIRMATION

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

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

Full Name of Bidder: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

CHECK ONE BOX AND INCLUDE APPROPRIATE NUMBER:

A - Individual or Sole Proprietorship \*  
SOCIAL SECURITY NUMBER

-----

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

-----

C - Corporation  
EMPLOYER IDENTIFICATION NUMBER

-----

By: \_\_\_\_\_  
Signature:

Title: \_\_\_\_\_

If a corporation, place seal here

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

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

**BIDDER'S IDENTIFICATION OF SUBCONTRACTORS**

**NOTICE TO BIDDERS**

**SUBMISSION:** The Bidder must, at the time of the bid, submit the 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 Local Law 129, if the bidder's intention to use its own forces to do any of the above-referenced work would result in Bidder's failure to attain the Target Subcontracting Percentage identified in the Subcontractor Utilization Plan, the bid will be non-responsive unless the bidder requests and obtains a Waiver of Target Subcontracting Percentage (Subcontractor Utilization Plan, Part III) in advance of bid submission.

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: HH112WBLR

**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 fulfillment of such Contract, which bonds shall be satisfactory in all respects to the City and shall be executed by good and sufficient sureties, and

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

BID BOND 2

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

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

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

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

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

(Seal)

\_\_\_\_\_  
Principal (L.S.)

By: \_\_\_\_\_

(Seal)

\_\_\_\_\_  
Surety

By: \_\_\_\_\_

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

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

\_\_\_\_\_  
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP

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

\_\_\_\_\_  
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

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

\_\_\_\_\_  
Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

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## BID BREAKDOWN

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

    X     YES                                 NO

### Limitations on Use of Bid Breakdown:

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

### Instructions for Preparing Bid Breakdown:

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

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**PLA PROJECT**

**ATTACHMENT 1 - BID INFORMATION  
PROJECT ID: HH112WBLR**

**DESCRIPTION AND LOCATION OF WORK:**

Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Clark Thomas Building,  
HELP SEC Building, Keener Buildings on Wards Island  
Manhattan  
New York, NY 10035  
E-PIN: 85013B0101 / DDC PIN: 8502013HL0004C

**DOCUMENTS AVAILABLE AT:**

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

**SUBMISSION OF BIDS BEFORE BID OPENING:**

**TIME TO SUBMIT:**

On or Before: **WEDNESDAY, MAY 15, 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:**

<b>PLACE OF BID OPENING:</b>	Department of Design and Construction Contract Section 30-30 Thomson Avenue – First Floor Long Island City, NY 11101
<b>DATE AND HOUR:</b>	WEDNESDAY, MAY 15, 2013 @ 2:00 PM
	LATE BIDS WILL NOT BE ACCEPTED

**PRE-BID CONFERENCE:**

**SPECIAL EXPERIENCE REQUIERMENTS**

<b>PLACE</b>	Clarks Thomas Building, HELP SEC building, Keener Building Wards Island Manhattan, NY 10035  Please meet at the CHARLES GAY KEENER (DHS) facility
<b>DATE AND HOUR</b>	WEDNESDAY, MAY 1, 2013 AT 10:00AM
<b>MANDATORY OR OPTIONAL</b>	OPTIONAL

**BID SECURITY:**

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

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

**PERFORMANCE AND PAYMENT SECURITY:**

Required for Contracts in 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) 391-2601 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	<u>INTRASTATE RATE</u>	<u>INTERSTATE RATE</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

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

**4. OSHA Information:**

\_\_\_\_\_ 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.

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

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
_____	_____	_____
_____	_____	_____
_____	_____	_____

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

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

**5. Safety Performance on Previous DDC Project(s)**

\_\_\_\_\_ 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**

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

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

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

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

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

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



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

I, \_\_\_\_\_, being duly sworn, state that I have read  
*Enter Your Name*

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

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

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

## **Vendor Questionnaire** *This section is required.*

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

Name of Submitting Entity: \_\_\_\_\_

Vendor's Address: \_\_\_\_\_

Vendor's EIN or TIN: \_\_\_\_\_ Requesting Agency: \_\_\_\_\_

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

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

Signature date on change submission for the submitting vendor: \_\_\_\_\_

# Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.



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

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

## Certification *This section is required.*

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

### Certified By:

\_\_\_\_\_  
*Name (Print)*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*Name of Submitting Entity*

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Date*

### Notarized By:

\_\_\_\_\_  
*Notary Public*

\_\_\_\_\_  
*County License Issued*

\_\_\_\_\_  
*License Number*

Sworn to before me on: \_\_\_\_\_  
*Date*

# Certificate of No Change Form



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*Enter Your Name*

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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: \_\_\_\_\_

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 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).

---

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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/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: HH112WBLR



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

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

---

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

**CONTRACT NO. 1      GENERAL CONSTRUCTION WORK**

# **Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project**

**LOCATION:**      Clarks Thomas Building, HELP SEC Building, Keener Building,  
Wards Island  
**BOROUGH:**      Manhattan 10035  
**CITY OF NEW YORK**

---

Contractor \_\_\_\_\_

Dated \_\_\_\_\_, 20\_\_\_\_

---

Entered in the Comptroller's Office \_\_\_\_\_

First Assistant Bookkeeper \_\_\_\_\_

Dated \_\_\_\_\_, 20\_\_\_\_





PROJECT ID: HH112WBLR

LAW DEPARTMENT

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](http://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

**Installation of New Central Boiler Plant  
and Fuel Tanks for Wards Island  
Project**

LOCATION: Clarks Thomas Building, HELP SEC Building, Keener  
Building, Wards Island  
BOROUGH: Manhattan 10035  
CITY OF NEW YORK  
CONTRACT NO. 1 GENERAL CONSTRUCTION WORK

Dept of Homeless Services

Cosentini Associates

Date: March 25, 2013



3-046





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](http://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 Contracts 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](http://www.nyc.gov/buycertified), by emailing DSBS at [buyer@sbs.nyc.gov](mailto: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](http://www.nyc.gov/getcertified), emailing [MWBE@sbs.nyc.gov](mailto: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 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup> and 8<sup>th</sup> 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 2<sup>nd</sup>, 5<sup>th</sup> and 8<sup>th</sup> 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 project 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 trustee 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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## CONTACT INFORMATION FOR LOCAL UNIONS

### BOILER MAKERS LOCAL NO. 5

24 Van Siclen Avenue  
Floral Park, NY 11001  
Phone: (516) 326-2500  
Fax: (516) 326-3435  
Thomas Klein, Bus. Mgr.  
[boilermakers5@optonline.net](mailto:boilermakers5@optonline.net)

### BLASTERS & DRILLERS LOCAL NO. 29

43-12 Ditmars Blvd.  
Astoria, NY, 11105  
Phone: (718) 278-5800  
Thomas Russo, bus mgr.

### BRICKLAYERS LOCAL NO. 1

Santo Lanzafame (718) 392-0525

### BUILDING TRADES

71 West 23<sup>rd</sup> Street, Suite 501  
New York, NY 10010  
Phone: (212) 647-0700  
Fax: (212) 647-0705  
John Barnett, Chairman

### CARPENTERS DISTRICT COUNCIL

395 Hudson Street  
New York, New York 10014  
Phone: (212) 366-7500  
Fax: (212) 675-3140  
Michael J. Forde, Executive Secy Treas.  
Peter Thomassen, President  
Denis Sheil, V.P.  
Ronald Rawald, D.C. Rep.  
[carpmik@aol.com](mailto:carpmik@aol.com)

### CEMENT MASONS NO. 780

150-42 12<sup>th</sup> Avenue  
Whitestone, NY 11357  
Phone: (718) 357-3750  
Fax: (718) 357-2057  
Angelo Scagnelli, Bus. Mgr.  
Paul M. Mantia, President  
[Angelolocal780@yahoo.com](mailto:Angelolocal780@yahoo.com)

### CONCRETE WORKERS DISTRICT COUNCIL NO. 16

29-18 35<sup>th</sup> Avenue  
Long Island City, NY 11106  
Phone: (718) 392-5077  
Fax: (718) 392-5087  
Alex Castaldi, Pres. Bus. Mgr.  
[Ccwdc16@yahoo.com](mailto:Ccwdc16@yahoo.com)

### DERRICKMEN AND RIGGERS CONCRETE WORKERS

25-19 43<sup>rd</sup> Avenue  
Long Island City, NY 11101  
Phone: (718) 361-6534

Fax: (718) 361-6584  
Joseph McDonald, Bus. Agent  
[joemac197@aol.com](mailto:joemac197@aol.com)

**DRYWALL TAPERS 1974**

265 West 14<sup>th</sup> Street  
New York, NY 10011  
Phone: (212) 242-8500  
Fax: (212) 242-2356  
Joseph Giordano, Bus. Mgr.  
Salvatore Marsala, Org.  
Maurice Maynard, Org.  
Ellior Santiago, Org.  
Vincent Calderone, Org.  
Ann Juliano Union Sec.  
[Local1974@aol.com](mailto:Local1974@aol.com)

**ELECTRICAL LOCAL NO. 3**

158-11 Harry Van Arsdale, Jr. Avenue  
Flushing, NY 113656  
Phone: (718) 591-4000  
Fax: (718) 380-8998  
Christopher Erikson, Bus. Mgr.  
John E. Marchell, President  
Raymond Melville, Asst. Bus. Mgr. Construction  
Paul Ryan, Asst. Bus. Mgr. Westchester/Fairfield  
Luis Restrepo, Asst. Bus. Mgr.  
Mark G. Hansen, Bus. Rep.  
Elliot Hecht, Bus. Rep.  
Raymond Kitson, Bus. Rep.  
Austin McCann, Bus. Rep.  
Robert Olenick, Bus. Rep.  
Michael O'Neill, Bus. Rep.  
Joseph Santigate, Bus. Rep.  
Louis Sciarra, Bus. Rep.  
Lance Van Arsdale, Asst. Bus. Maintenance Division  
Ray West, Bus. Rep.  
[mail@local3ibew.org](mailto:mail@local3ibew.org)

**ELEVATOR CONSTRUCTORS NO. 1**

47-24 27<sup>th</sup> Avenue  
Long Island City, NY 11101  
Phone: (718) 767-7004  
Fax: (718) 767-6730  
Lenny Legotte, Pres. Bus. Mgr.  
Thomas Moore, Bus. Agent  
Gary Riefenhauser, Bus. Agent  
Fred McCourt, Bus. Agent  
Robert Stork, Bus. Agent  
[llegotte@localoneiuec.com](mailto:llegotte@localoneiuec.com)  
[snoble@localoneiuec.com](mailto:snoble@localoneiuec.com)

**ENGINEERS NO. ENGINEERS LOCAL UNION NO. 14**

141-57 Northern Boulevard  
Flushing, NY 11354  
Phone: (718) 939-0600  
Fax: (718) 939-3131  
Edwin Christian, Pres. Bus. Mgr.

Christopher Confrey, Bus. Rep. Rec Sec.  
John R. Powers, Bus. Rep. Treas.  
[engineers@iuoelocal14.com](mailto:engineers@iuoelocal14.com)

**ENGINEERS NO. 15, 15A, 15B, 15C, 15D**

265 West 14<sup>th</sup> Street  
New York, NY 10011  
Phone: (212) 929-5327-8-9  
Fax: (212) 206-0357  
James T. Callahan, Pres. & Bus. Mgr.  
Robert G. Shaw, Bus. Rep. & V.P.  
Charles Gambino, Bus. Rep., Fin. Sec.  
Brian S. Kelly, Bus. Rep. & Rec. Sec.  
Daniel Schneider, Bus. Rep. & Treasurer  
Gregg Nolan, Bus. Rep.  
Christopher Thomas, Bus. Rep.  
Bruce Murphy, Director of Training

**ENGINEERS NO. 30**

115-06 Myrtle Avenue  
Richmond Hill, NY 11418  
Phone: (718) 847-8484  
Fax: (718) 850-0524  
John T. Ahern, Bus. Mgr.

**ENGINEERS No. 94**

331-337 West 44<sup>th</sup> Street  
New York, NY 10036  
Phone: (212) 245-7040 Fax: (212) 245-7886  
Kuba Brown, Bus. Mgr. & President  
[kubabrown@local94.com](mailto:kubabrown@local94.com)

**GLAZERS NO. 1281**

45 West 14<sup>th</sup> Street  
New York, NY 10011  
Phone: (212) 924-5200  
Fax: (212) 255-1151  
William Elfeld, Bus. Rep.

**HEAT & FROST INSULATORS AND ASBESTOS WORKERS LOCAL UNION NO. 12**

25-19 43<sup>rd</sup> Avenue  
Long Island City, NY 11101  
Phone: (718) 784-3456  
Fax: (718) 784-8357  
Joseph Lapinski, Bus. Agent  
Nick Grgas, Bus. Agent  
Matthew Aracick, Fin. Sec.  
John Killard, President  
Dennis Ippolito, Bus. Mgr.  
[matty@insulatorslocal12.com](mailto:matty@insulatorslocal12.com)  
[dennis@insulators.org](mailto:dennis@insulators.org)

**HEAT FROST INSULATORS LOCAL UNION NO. 12A**

2110 Newton Avenue  
Astoria, NY 11102  
Phone: (718) 937-3203  
Fax: (718) 482-8722  
Francisco Vega, Bus. Mgr.

**IRON WORKERS DISTRICT**

505 White Plains Road, Suite 200  
Tarrytown, NY 10591  
Phone: (914) 332-4430  
Fax: (914) 332-4431  
Edward J. Walsh, Pres.  
[ironworkdc@aol.com](mailto:ironworkdc@aol.com)

**IRON WORKERS NO. 40**

451 Park Avenue South  
New York, NY 10016  
Phone: (212) 889-1320  
Fax: (212) 779-3267  
Robert Walsh, Bus. Mgr. Fin. Sec.  
Daniel Doyle, Bus. Rep. V.P.  
Kevin O'Rourke, Pres. Bus. Agent

**IRON WORKERS NO. 361**

89-19 97<sup>TH</sup> Avenue  
Ozone Park, NY 11416  
Phone: (718) 332-1016-17  
Fax: (718) 322-1053  
Matthew Chartrand, Pres. Bus. Agent  
Richard O'Kane, Bus. Mgr. Fin. Sec.  
Thomas Seaman, President  
Anthony DeBlaisie, Bus. Agent, V.P.  
John Delaney, Jr., Rec. Sec.  
[unionhall@361.com](mailto:unionhall@361.com)

**LABORERS LOCAL NO. 78 ASBESTOS & LEAD ABATEMENT**

30 Cliff Street  
New York, New York 10038-2825  
Phone: (212) 227-4805  
Fax: (212) 406-1800  
Kazik Prosniewski, Pres.  
Edison Severino, Bus. Mgr.  
Pawel Gruchacz, Sec. Treas.  
[Local78dispatchers@gmail.com](mailto:Local78dispatchers@gmail.com)

**LABORERS, CONSTRUCTION AND GENERAL BUILDING NO. 79**

520 8<sup>th</sup> Avenue  
New York, NY 10018  
Phone: (212) 465-7900  
Fax: (212) 465-7903  
Kenneth Brancaccio, President  
John Delgado, Bus. Mgr.  
George Zecca, Bus. Mgr.  
John Norbury, V.P. & Bus. Agent  
Chas Rynkiewicz, Organizer, Mk Dev.  
Eugene Sparano, Organizer Mkt. Dev.  
John Modica, Bus. Agent  
Joseph Cangelosi, Bus. Agent  
Kenny Robinson, Bus. Agent  
James Haggerty, Bus. Agent  
Carl Tully, Bus. Agent  
Jose Andino, Bus. Agent  
Edward Medina, Bus. Agent



Luis Pereria, Bus Agent  
Noe Duran, Bus. Agent  
Timothy Campbell, Bus. Agent  
John Wund, Agent, Organizer  
[79@laborerslocal.org](mailto:79@laborerslocal.org)

**LABORERS NO. 731**

34-11/19 35<sup>th</sup> Avenue  
Astoria, NY 11106  
(718) 706-0720  
Joseph D'Amato, Bus. Mgr.

**LATHERS METAL LOCAL NO. 46**

1322 Third Avenue  
New York, NY 10021  
Phone: (212) 737-0500  
Fax: (212) 249-1226  
Robert Ledwith, Bus. Mgr.  
Terence Moore, Bus. Agent  
Kenneth Allen, Bus. Agent  
Fred LeMoine Jr., Bus. Agent  
Kevin Kelly, Bus. Agent

**MASON TENDERS DIST. COUNCIL**

520 8<sup>th</sup> Avenue  
New York, NY 10018  
Phone: (212) 452-9400  
Fax: (212) 452-9499  
Robert Bonanza, Bus. Mgr.  
David Bolger, Field Rep.

**METAL POLISHERS LOCAL UNION NO. 8A**

36-18 33<sup>rd</sup> Street 2<sup>nd</sup> Fl.  
Long Island City, 11106  
Phone: (718) 361-1770  
Fax: (718) 361-1934  
Hector Lopez, Bus. Mgr., Pres.

**METAL TRADES DIVISION**

Kevin Connelly, Bus. Agent  
21-42 44<sup>th</sup> Drive

**MILLWRIGHT AND MACHINERY ERECTORS LOCAL NO. 740**

89-07 Atlantic Avenue  
Woodhaven, NY 11412  
Phone: (718) 849-3636  
Fax: (718) 849-0070  
Robert Seeger, Bus. Mgr.

**ORNAMENTAL IRON WORKERS NO. 580**

501 West 42<sup>nd</sup> Street  
New York, NY 10036  
Phone: (212) 594-1662  
Fax: (212) 564-2748  
Dennis Lusardi, Bus. Mgr.  
James Mahoney, Bus. Agent  
Robert Benesh, Bus. Agent  
Dennis Milton, Bus. Agent

Peter Creegan, Bus. Agent  
[dusardi@local-580.com](mailto:dusardi@local-580.com)

**PAINTERS DISTRICT COUNCIL NO. 9**

45 West 14<sup>th</sup> Street  
New York, NY 10011  
Phone: (212) 255-2950  
Fax: (212) 255-1151  
William Elfeld, President  
Gerard O'Brien, Bus. Rep.  
Greg Coords, Bus. Rep.  
Richard Small, Bus. Rep.  
Jose Torent, Bus. Rep.  
Raul Rendon, Bus. Rep.  
Paul Belliveau, Bus. Rep.  
Joseph Ramaglia, Bus. Mgr.  
Anthony Buscema, Bus. Rep.  
James Barnett, Bus. Rep.  
Angelo Serse, Bus. Rep.  
Jack Kittle, Political Dir.  
Gus Diamantas, Training Director  
John Barrett, Bus. Rep.

**PAINTERS STRUCTURAL STEEL NO. 806**

40 West 27<sup>th</sup> Street  
New York, New York 10001  
Phone: (212) 447-1838, 0149  
Fax: (212) 545-8386  
Angelo Serse, Bus. Mgr.

**PAVERS & ROAD BUILDERS DISTRICT COUNCIL NO. 1**

136-25 37<sup>th</sup> Avenue, Suite 502  
Flushing, NY 11354  
Phone: (718) 779-8850  
Fax: (718) 779-8857  
Keith Loscalzo, Bus. Mgr.  
Vincent Masino, Trustee  
Lowell Barton, Bus. Agent  
Francisco Fernandez, Bus. Agent  
Joao Teixeira, Bus. Agent  
Bonaventura Valerio, Bus. Agent  
Joseph Sarro, Bus. Agent

**PLASTERS LOCAL UNION NO. 262**

2241 Conner Street  
Bronx, NY 10466  
Phone: (718) 547-5440  
Fax: (718) 547-5435  
John Sweeney, Int'l Rep.  
[mventura@opcmllocal262.com](mailto:mventura@opcmllocal262.com)

**PLUMBERS NO. 1**

158-29 Bross Bay Boulevard  
Howard Beach, NY 11414  
Phone: (718) 738-7500  
Fax: (718) 835-0896  
George Reilly, Bus. Mgr.  
Daniel Lucarelli, Bus. Agent  
PLA-Union Contact List\_rev

Kevin Brady Sr., Bus. Agent  
Donald Doherty Jr. Bus. Agent at Large  
Dudley Kinsley, Bus. Agent  
Michael Apuzzo, Bus. Agent  
John Feeney Jr., Bus. Agent  
Paul O'conner, Bus. Agent  
Anthony Russini, Bus. Agent  
John Murphy, Fin. Sec. Treasurer  
Fred Delligatti, Bus. Agent  
Thomas Kemps, Bus. Agent  
[plulny@aol.com](mailto:plulny@aol.com)

**PRIVATE SANITATION LOCAL NO. 813**

45-18 Court Sq., Suite 600  
Long Island City, NY 11101  
Phone: (718) 937-7010  
Fax: (718) 937-7003  
Anthony Marino, President

**ROOFERS & WATERPROOFERS NO. 8**

467 Dean Street  
Brooklyn, NY 11217  
Phone: (718) 857-3500  
Fax (718) 398-8359  
Thomas Pedrick, Trustee & Int'l V.P.  
Nicolas Siciliano, Bus. Agent

**SHEET METAL WORKERS LOCAL NO. 28**

MANHATTAN OFFICE  
500 Greenwich Street  
New York, NY 10013  
Phone: (212) 226-941-7700  
Fax: (212) 226-0304  
Brian McBreaty, Bus. Agent  
Richard Knice, Fin. Sec-Treas.  
Michael Belluzzi, Bus. Mgr. & Pres.  
Kevin McPike, Bus. Agent  
Daniel Fox Jr., Bus. Agent  
Rick Buckheit, Bus. Agent  
Robert Rotolo, Bus. Mgr.  
[joanne@local28union.com](mailto:joanne@local28union.com)

**SHEET METAL WORKERS LOCAL 137**

21-42 44<sup>th</sup> Drive  
Long Island City, NY 11101  
Phone: (718) 937-4514  
Fax: (718) 937-4113  
Paul Collins Jr.  
Dante Dano, Agent

**STEAMFITTERS LOCAL UNION NO. 638**

32-32 48<sup>th</sup> Avenue  
Long Island City, NY 11101  
Phone: (718) 392-3420  
Fax: (718) 784-7285  
John Torpey, Pres.-Fax: (718) 372-5340  
James Elder, Sec. Treasurer  
John Enright, Bus. Agent

John O'Connell, Bus. Agent  
Richard Roberts, Bus. Agent At-Large  
Patrick Dolan Jr., Bus. Agent  
Brian Wangerman, Bus. Agent  
Robert Egan Jr., Bus. Agent  
Vincent Curran Jr., Bus. Agent  
Patrick Daly, Bus. Agent  
Raymond Dean Jr., Bus. Agent  
Scott Roche, Bus. Agent  
Patrick Norton, Bus. Agent  
Robert Bartels, Jr. Bus. Agent  
Christopher P. Sheeran, Bus. Agent  
[bpetriccione@steamfitters638.org](mailto:bpetriccione@steamfitters638.org)  
[rroberts@steamfitters638.org](mailto:rroberts@steamfitters638.org)

**TEAMSTERS LOCAL UNION 282**

2500 Marcus Avenue  
Lake Success, NY 11042  
Phone: (516) 488-2822  
Fax: (516) 488-4895  
Thomas Gesualdi  
[Kpalmeri282@yahoo.com](mailto:Kpalmeri282@yahoo.com)

**TEAMSTERS LOCAL UNION 814**

33-01 38<sup>TH</sup> Avenue  
Long Island City, NY 11101  
Phone: (718) 392-4510  
Fax: (718) 361-9610  
George Daniello, Pres., Bus. Mgr.  
[team814@hotmail.com](mailto:team814@hotmail.com)

**TILE, MARBLE & TERRAZO B.A.C. LOCAL UNION 7**

45-34 Court Square  
Long Island City, NY 11101  
Phone: (718) 786-7648  
Fax: (718) 472-2370  
Thomas Lane, President Bus. Mgr.  
William Hill, Bus. Agent  
Blaise Toneatto, Bus. Agent  
Christopher Guy, Sec. Treasuer  
Ernesto Jimenez, Bus. Agent  
Joseph Andriano, Bus. Agent  
Ronald Nicastri, Bus. Agent  
James Ghan, Bus. Agent  
[tlane@baclocal7.com](mailto:tlane@baclocal7.com)

**TIMBERMEN LOCAL 1536**

395 Hudson Street, 8<sup>th</sup> Floor  
New York, NY 10014  
Phone: (212) 366-7500  
Samuel Bailey, Bus. Mgr.

NYC AGENCY RENOVATION & REHAB OF CITY OWNED BUILDINGS/STRUCTURES

**PROJECT LABOR AGREEMENT**

**COVERING SPECIFIED**

**RENOVATION & REHABILITATION  
OF CITY OWNED BUILDINGS AND STRUCTURES**

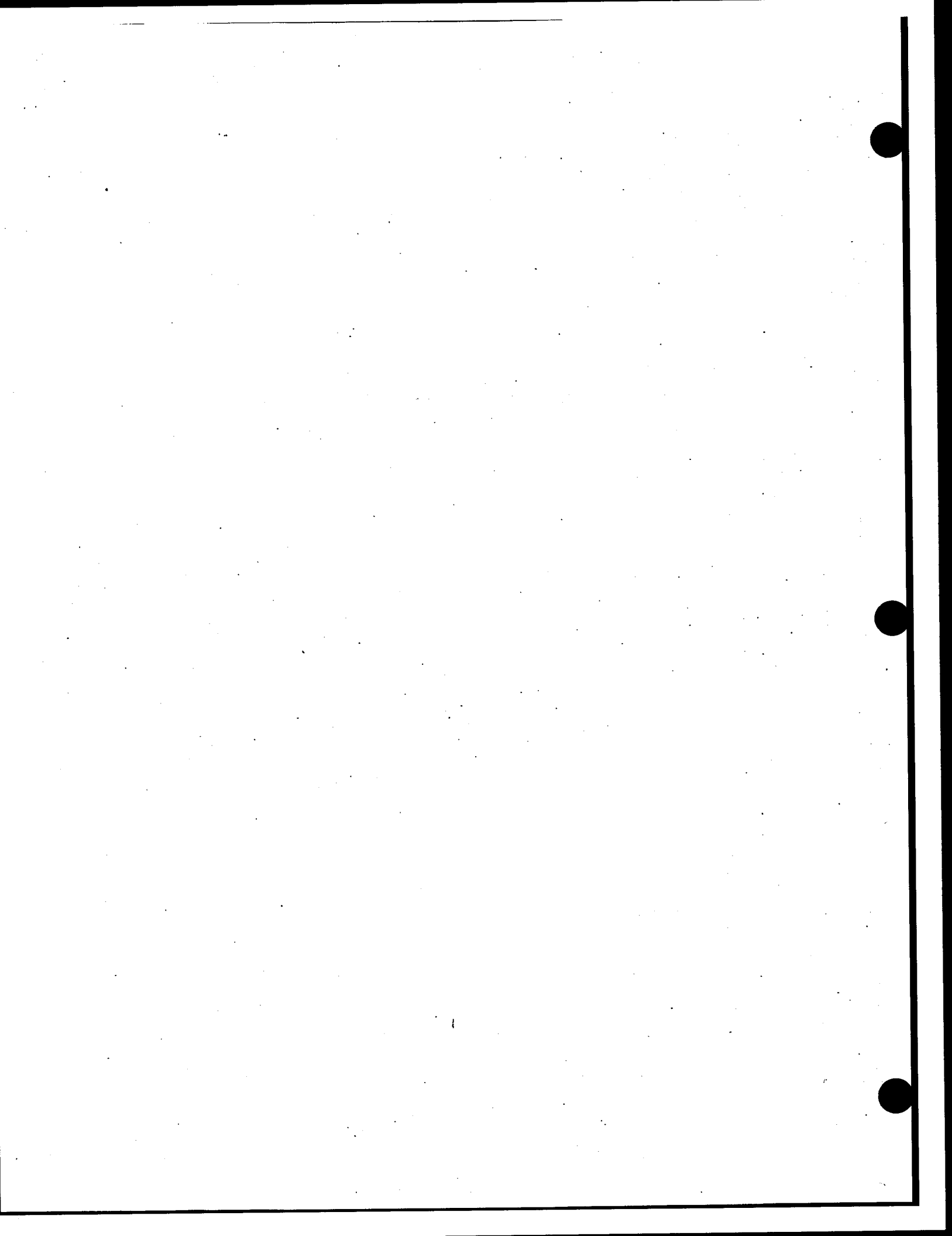


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**PROJECT LABOR AGREEMENT COVERING SPECIFIED  
RENOVATION & REHABILITATION OF NEW YORK CITY OWNED  
FACILITIES & STRUCTURES**

**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;

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- (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

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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

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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**



NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

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;

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

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

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

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**

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

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 (2<sup>nd</sup>), fourth (4<sup>th</sup>), sixth (6<sup>th</sup>), and eighth (8<sup>th</sup>) 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 (2<sup>nd</sup>), fifth (5<sup>th</sup>), and eighth (8<sup>th</sup>) 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

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

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



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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 clause, 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,

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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.

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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

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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 trustee 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 trustee 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 trustee 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

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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](http://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.

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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

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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

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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

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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 or 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**

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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

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

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.**



NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

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.

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

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*  
Gary LaBarbera  
President

FOR NEW YORK CITY

BY: \_\_\_\_\_  
Michael R. Bloomberg  
Mayor

APPROVED AS TO FORM:

\_\_\_\_\_  
ACTING CORPORATION COUNSEL  
NEW YORK CITY

NYC AGENCY RENOVATION & REHAB CITY OWNED BUILDINGS/STRUCTURES

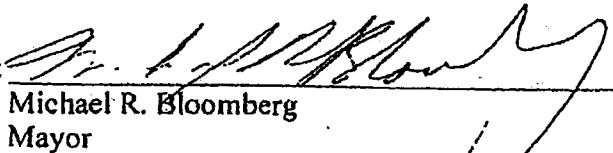
IN WITNESS WHEREOF the parties have caused this Agreement to be executed and effective

as of the \_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

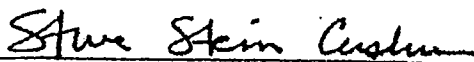
FOR BUILDING AND CONSTRUCTION TRADES COUNCIL  
OF GREATER NEW YORK AND VICINITY

BY: \_\_\_\_\_  
Gary LaBarbera  
President

FOR NEW YORK CITY

BY:   
Michael R. Bloomberg  
Mayor

APPROVED AS TO FORM:

  
ACTING CORPORATION COUNSEL  
NEW YORK CITY

DEC 1 8 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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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 \_\_\_\_\_ 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.

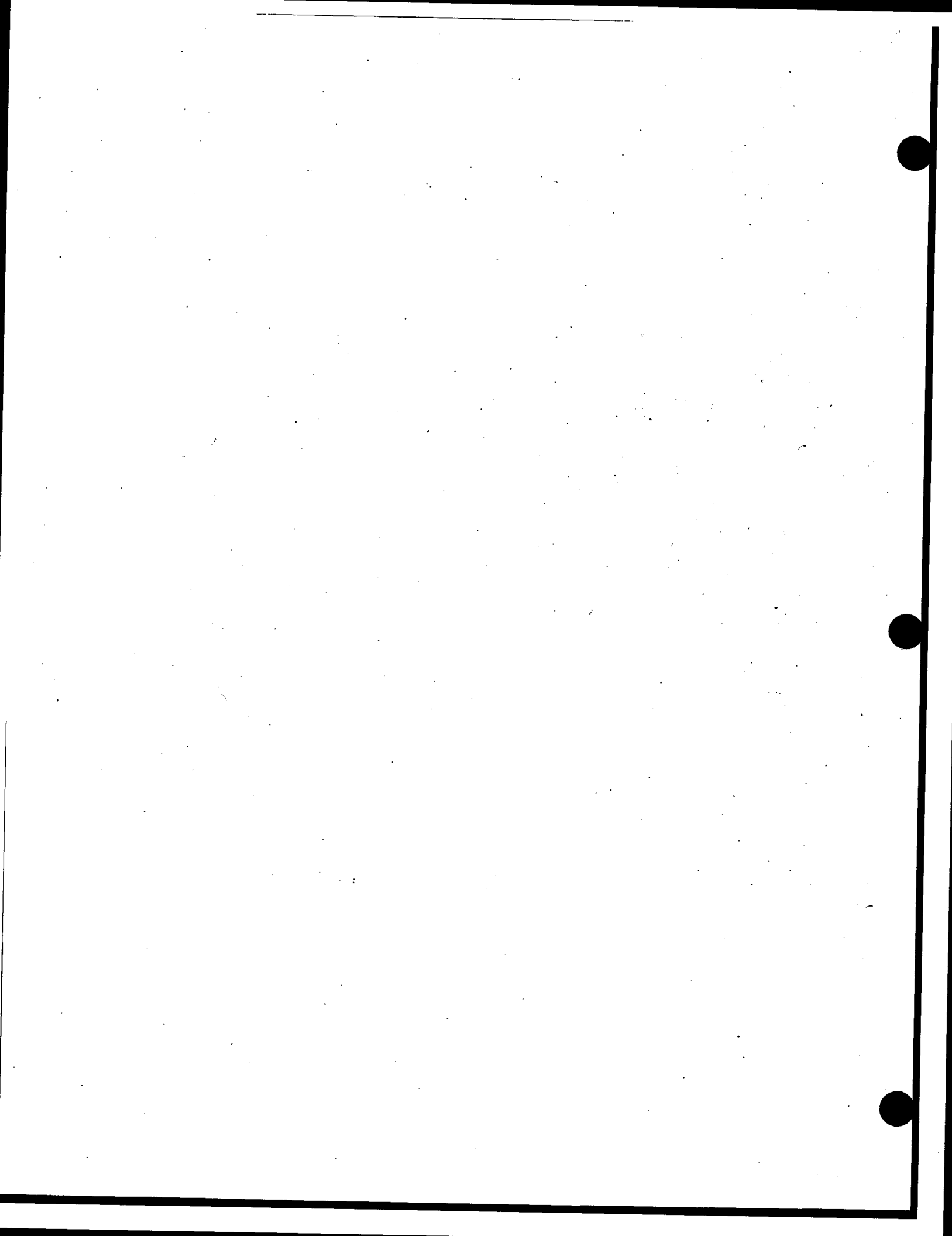


# NOTICE TO BIDDERS

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 or unintentional omission can be clearly shown by objective evidence drawn from inspection of the original work paper, documents, or materials used in the preparation of the bid sought to be withdrawn; and
- (e) It is possible to place the agency in the same position as existed prior to the bid.

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

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

## 20. Low Tie Bids

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

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

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

## 21. Rejection of Bids

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

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

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

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

- (1) All otherwise acceptable bids received are at unreasonable prices, or only one bid is received and the Agency Chief Contracting Officer cannot determine the reasonableness of the bid price, or no responsive bid has been received from a responsible bidder; or
  - (2) In the judgment of the Agency Chief Contracting Officer, the bids were not independently arrived at in open competition, were collusive, or were submitted in bad faith.
- (D) When the Agency has determined that the Invitation for Bids is to be canceled and that use of negotiation is appropriate to complete the acquisition, the contracting officer may negotiate and award the Contract without issuing a new solicitation, subject to the following conditions:
- (1) prior notice of the intention to negotiate and a reasonable opportunity to negotiate have been given by the contracting officer to each responsible bidder that submitted a bid in response to the Invitation for Bids;
  - (2) the negotiated price is the lowest negotiated price offered by a responsible bidder; and
  - (3) the negotiated price is lower than the lowest rejected bid price of a responsible bidder that submitted a bid in response to the Invitation for Bids.

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

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

23. Affirmative Action and Equal Employment Opportunity

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

24. VENDEX Questionnaires

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

(B) Submission: Vendex Questionnaires must be submitted directly to the Mayor's Office of Contract Services, ATTN: Vendex, 253 Broadway, 9<sup>th</sup> 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](http://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 it meets the required percentage.

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

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

38. Bid Submission Requirements

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

39. Comptroller's Certificate

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

40. Procurement Policy Board Rules

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

41. DDC Safety Requirements

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

**CITY OF NEW YORK**  
**DEPARTMENT OF DESIGN AND CONSTRUCTION**  
**SAFETY REQUIREMENTS**

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**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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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](http://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:  $(.035) \times (\text{HP rating}) \times (\text{Fuel cost/gallon})$ . Reasonable rental value is defined as the lower of either seventy-five percent of the monthly prorated rental rates established in "The AED Green Book, Rental Rates and Specifications for Construction Equipment" published by 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:  $(.035) \times (\text{HP rating}) \times (\text{Fuel cost/gallon})$ . In lieu of renting, the City reserves the right to direct the purchase of non-operating equipment (scaffolding, sheeting systems, road plates, etc.), with payment on a purchase-salvage/life cycle basis, if less than the projected rental costs; plus

26.2.7 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 construction of comparable quality, the Agency shall refer such bids to the Mayor, the Speaker or other officials, as appropriate, who may determine, in accordance with applicable Law 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 assess, identify and actively recruit employees from under-represented religious groups with potential for further advancement; and

69.3.1(i) appoint a senior management staff member to oversee affirmative action efforts and develop a timetable to ensure their full implementation.

69.4 The **Contractor** agrees that the covenants and representations in Article 69.2 are material conditions to this **Contract**. In the event the **Agency** receives information that the **Contractor** who made the stipulation required by this Article 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 \_\_\_\_\_.



**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: Six million Dollars, (\$ 6,443,451.40 ), 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.

*four hundred forty three thousand four hundred fifty one dollars and forty cents*

**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.

**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](mailto: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

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 ID). SUBCONTRACTOR UTILIZATION PLANS WHICH DO NOT INCLUDE THE REQUIRED AFFIRMATIONS WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE TARGET SUBCONTRACTING 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](http://www.nyc.gov/buycertified), by emailing DSBS at [buyer@sbs.nyc.gov](mailto:buyer@sbs.nyc.gov), by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7<sup>th</sup> floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting [www.nyc.gov/getcertified](http://www.nyc.gov/getcertified), emailing [MWBE@sbs.nyc.gov](mailto: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.

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.

## 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

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.

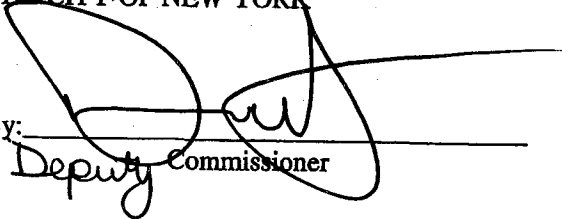
5. Whenever Agency has reason to believe that an MBE or WBE is not qualified for certification, or is participating in a contract in a manner that does not serve a commercially useful function (as defined in Section 6-129), or has violated any provision of Section 6-129, Agency shall notify the commissioner 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.

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: BQE Industries, Inc.

By:   
(Member of Firm or Officer of Corporation)

Title: Project Manager

(Where Contractor is a Corporation, add):  
Attest:

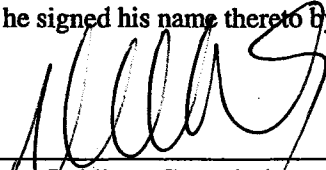
\_\_\_\_\_  
Secretary

(Seal)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 29th day of August, before me personally came Meherban Mashurui to me known, who, being by me duly sworn did depose and say that he resides at 43-43 Kissena Blvd Flushing, NY 11355 that he is the Project Manager 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.

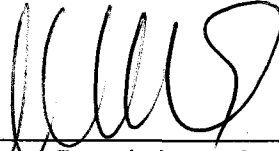
\_\_\_\_\_  
Notary Public or Commissioner of Deeds



ACKNOWLEDGMENT BY COMMISSIONER

State of New York County of Queens ss:

On this 30<sup>th</sup> day of August 2013, 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, 2015

AUTHORITY

MAYOR'S CERTIFICATE NO. CBX  
BUDGET DIRECTOR'S CERTIFICATE NO.

DATED  
DATED

APPROPRIATION  
COMMISSIONER'S CERTIFICATE

In conformity with the provisions of Section 6-101 of the Administrative Code of the City of New York, it is hereby certified that the estimated cost of the work, materials and supplies required by the within Contract, amounting to

Six million four hundred forty  
three thousand four hundred fifty one dollars and forty cents

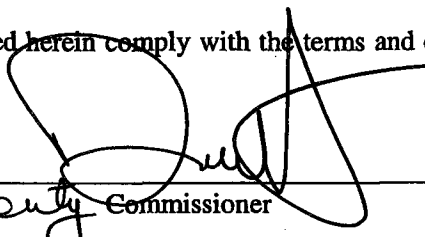
Dollars (\$6,443,451.40)

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

**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 (Page 1)

PERFORMANCE BOND #1

KNOW ALL PERSONS BY THESE PRESENTS, That we, \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

hereinafter referred to as the "Principal", and \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 1)

PERFORMANCE BOND #2

KNOW ALL PERSONS BY THESE PRESENTS, That we, \_\_\_\_\_

BOE Industries, Inc.

40-49 72nd Street

Woodside, New York 11377

hereinafter referred to as the "Principal", and North American Specialty Insurance Company

475 North Martingale Road, Schaumburg, IL 60173

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

Six Million Four Hundred Forty Three Thousand Four Hundred Fifty One and 40/100

(\$ 6,443,451.40 ) 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.

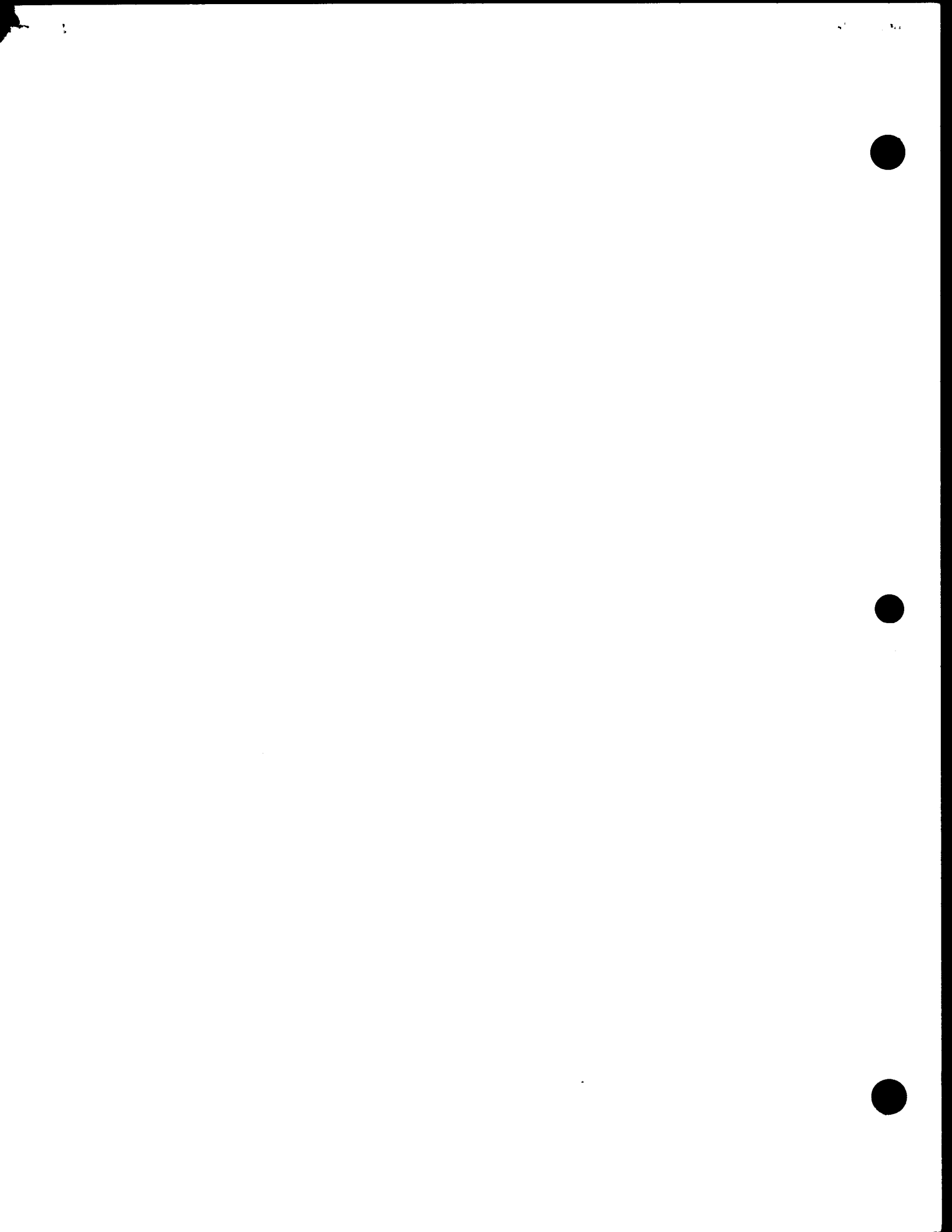
WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

FMS ID: HH112WBRL - E-PIN: 85013B0101 - DDC PIN: 8502013HL0004C

Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project

Borough of Manhattan

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;



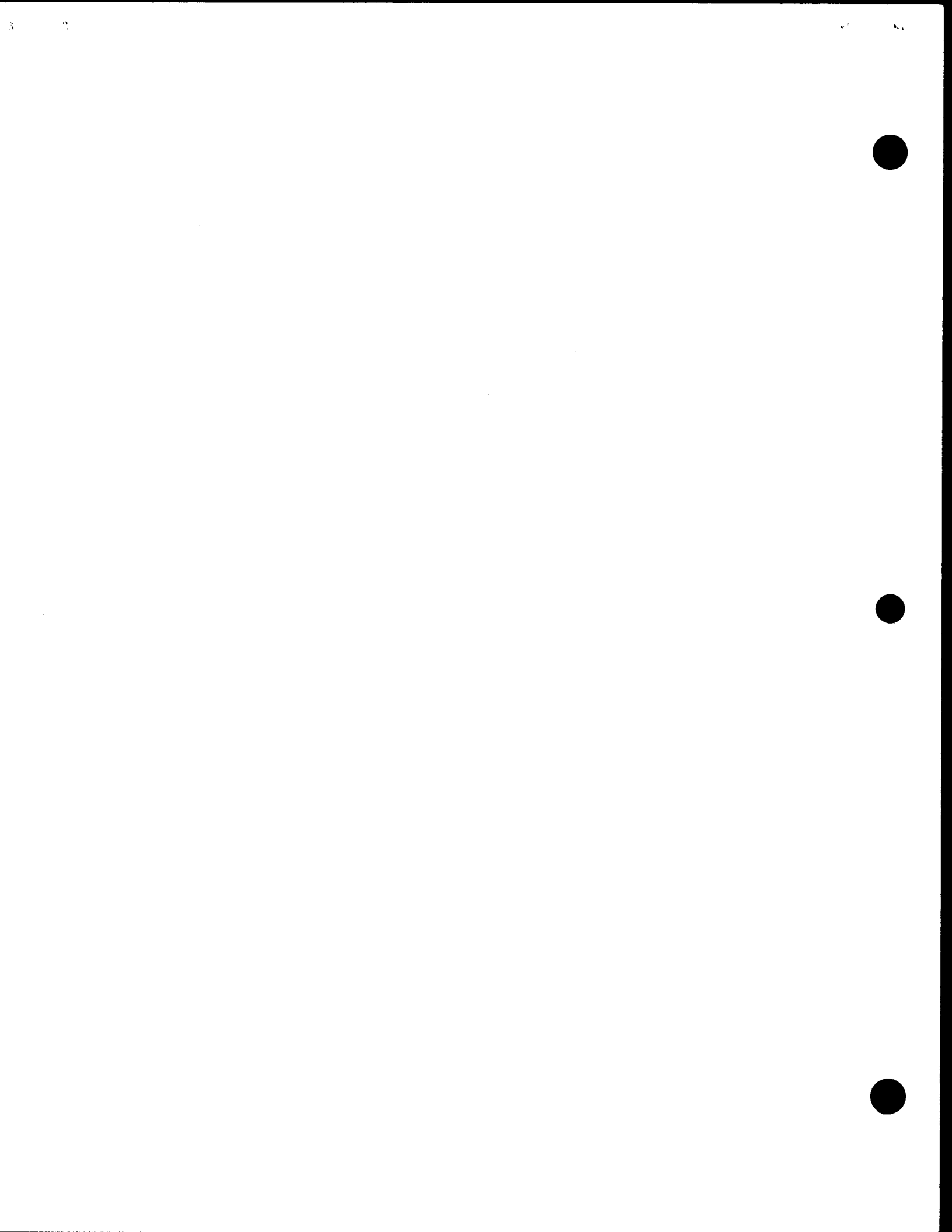
**Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than \$5 Million.**

PERFORMANCE BOND #2 (Page 2)

**NOW, THEREFORE**, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to 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.**

PERFORMANCE BOND #2 (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereto 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 22nd day of August, 2013.

(Seal) BQE Industries, Inc. (L.S.)  
Principal  
By: [Signature]

(Seal) North American Specialty Insurance Company  
Surety  
By: [Signature]  
Michele A. Dery, Attorney-in-Fact

(Seal) n/a  
Surety  
By: \_\_\_\_\_

(Seal) n/a  
Surety  
By: \_\_\_\_\_

(Seal) n/a  
Surety  
By: \_\_\_\_\_

(Seal) n/a  
Surety

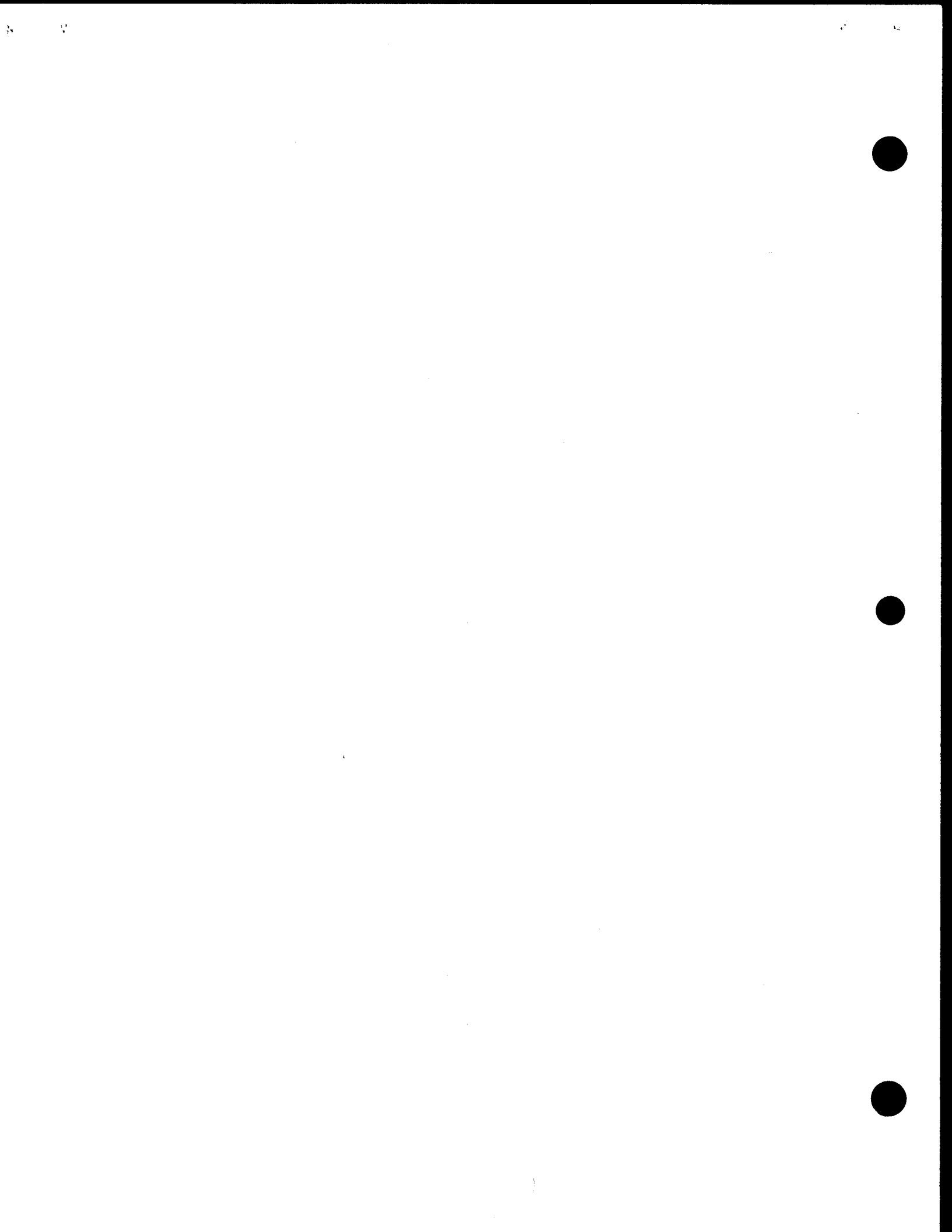
Bond Premium Rate \$25/Slide

Bond Premium Cost \$57,354.00

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.**

PERFORMANCE BOND #2 (Page 4)

**ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION**

State of New York County of Queens ss:

On this 26th day of August, 2013 before me personally came Pankas Kumar to me known, who, being by me duly sworn did depose and say that he/she resides at 10 Scherthaus Lane Robyn Haight, NY; that he/she is the President of RSK Industries Inc. 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.

[Signature]  
Notary Public State of New York  
No. 4787428  
Qualified in Queens County  
Certificate Filed in New York and Nassau Counties  
Commission Expires Oct. 31, 2013  
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:

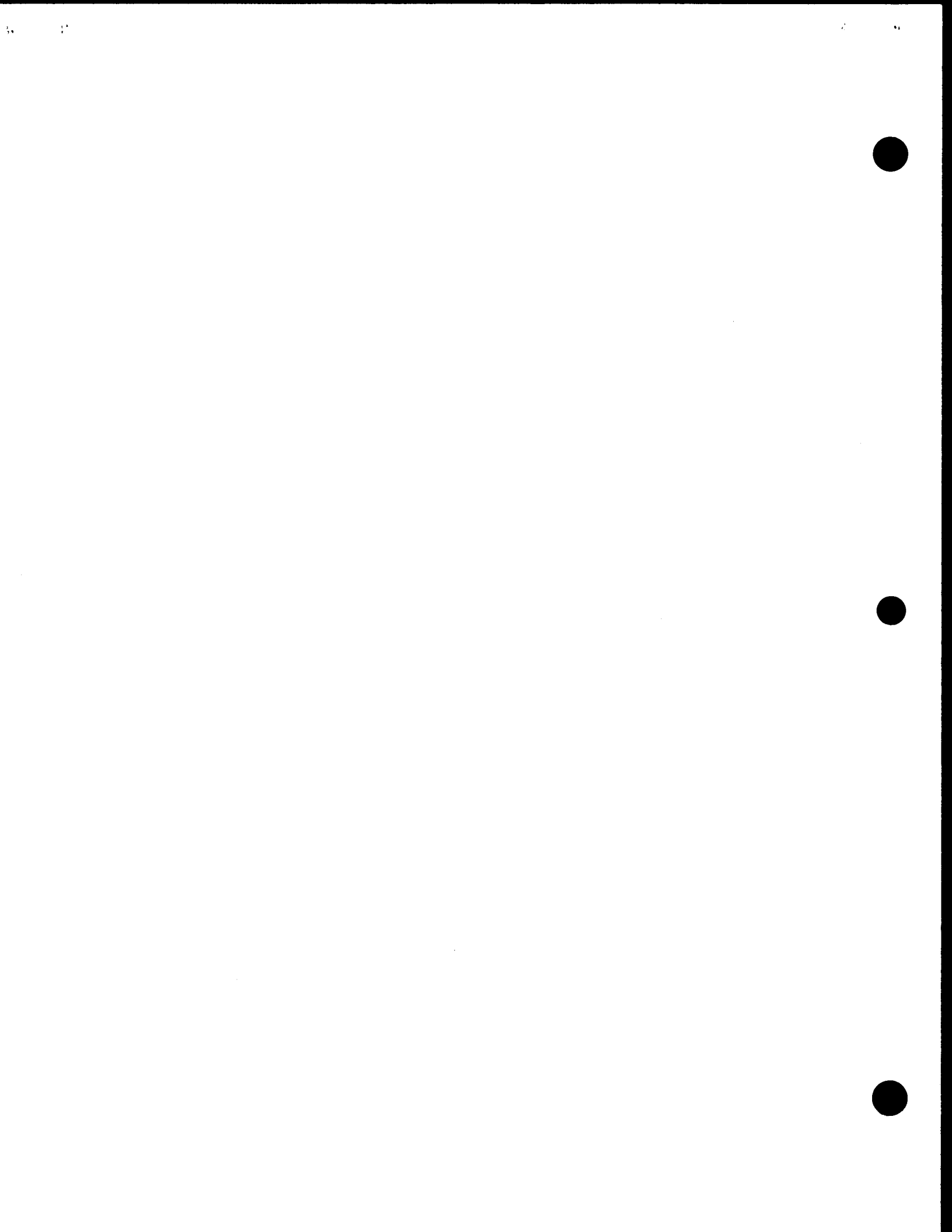
On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ before me personally came \_\_\_\_\_ to me known, who, being by me duly sworn did depose and say that he/she resides at \_\_\_\_\_, and that he/she is the individual whose name is subscribed to the within instrument and acknowledged to me that by his/her 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.



**NORTH AMERICAN SPECIALTY INSURANCE COMPANY**

State of New Jersey  
County of Essex

On this 22nd day of August, 2013 before me personally came Michele A. Dery, to me known, who, being by me duly sworn, did depose and say that she resides in West Caldwell, New Jersey and that she is the Attorney-in-Fact of North American Specialty Insurance Company described in and which executed the within instrument; that she knows the corporate seal of said corporation; that the seal affixed to the within instrument is such corporate seal; and that she signed the said instrument and affixed said seal as Attorney-in-Fact by authority of the Board of Directors of said corporation, and by authority of this office under the Standing Resolutions thereof.

  
\_\_\_\_\_  
Notary Public

**KAREN L. BERTHOLF**  
**NOTARY PUBLIC OF NEW JERSEY**  
My Commission Expires Sept. 19, 2015

REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF EDUCATION  
OFFICE OF THE SECRETARY  
MUNICIPAL OFFICE  
GENERAL A. ROXAS AVENUE  
MANILA

NAS SURETY GROUP

NORTH AMERICAN SPECIALTY INSURANCE COMPANY  
WASHINGTON INTERNATIONAL INSURANCE COMPANY

GENERAL POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, THAT North American Specialty Insurance Company, a corporation duly organized and existing under laws of the State of New Hampshire, and having its principal office in the City of Manchester, New Hampshire, and Washington International Insurance Company, a corporation organized and existing under the laws of the State of New Hampshire and having its principal office in the City of Schaumburg, Illinois, each does hereby make, constitute and appoint:

PETER T. DUFFY, MICHELE A. DERY, LISA JENKINS,

NOEL K. WALSH and BARBARA J. HANCOCK

JOINTLY OR SEVERALLY

Its true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver, for and on its behalf and as its act and deed, bonds or other writings obligatory in the nature of a bond on behalf of each of said Companies, as surety, on contracts of suretyship as are or may be required or permitted by law, regulation, contract or otherwise, provided that no bond or undertaking or contract or suretyship executed under this authority shall exceed the amount of:

FIFTY MILLION (\$50,000,000.00) DOLLARS

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Boards of Directors of both North American Specialty Insurance Company and Washington International Insurance Company at meetings duly called and held on the 9<sup>th</sup> of May, 2012:

“RESOLVED, that any two of the Presidents, any Managing Director, any Senior Vice President, any Vice President, any Assistant Vice President, the Secretary or any Assistant Secretary be, and each or any of them hereby is authorized to execute a Power of Attorney qualifying the attorney named in the given Power of Attorney to execute on behalf of the Company bonds, undertakings and all contracts of surety, and that each or any of them hereby is authorized to attest to the execution of any such Power of Attorney and to attach therein the seal of the Company; and it is

FURTHER RESOLVED, that the signature of such officers and the seal of the Company may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be binding upon the Company when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached.”



By [Signature]  
Steven P. Anderson, Senior Vice President of Washington International Insurance Company  
& Senior Vice President of North American Specialty Insurance Company



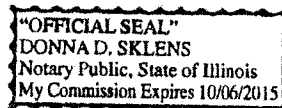
By [Signature]  
David M. Layman, Vice President of Washington International Insurance Company  
& Vice President of North American Specialty Insurance Company

IN WITNESS WHEREOF, North American Specialty Insurance Company and Washington International Insurance Company have caused their official seals to be hereunto affixed, and these presents to be signed by their authorized officers this 5<sup>th</sup> day of June, 2012.

North American Specialty Insurance Company  
Washington International Insurance Company

State of Illinois  
County of Cook ss:

On this 5<sup>th</sup> day of June, 2012, before me, a Notary Public personally appeared Steven P. Anderson, Senior Vice President of Washington International Insurance Company and Senior Vice President of North American Specialty Insurance Company and David M. Layman, Vice President of Washington International Insurance Company and Vice President of North American Specialty Insurance Company, personally known to me, who being by me duly sworn, acknowledged that they signed the above Power of Attorney as officers of and acknowledged said instrument to be the voluntary act and deed of their respective companies.

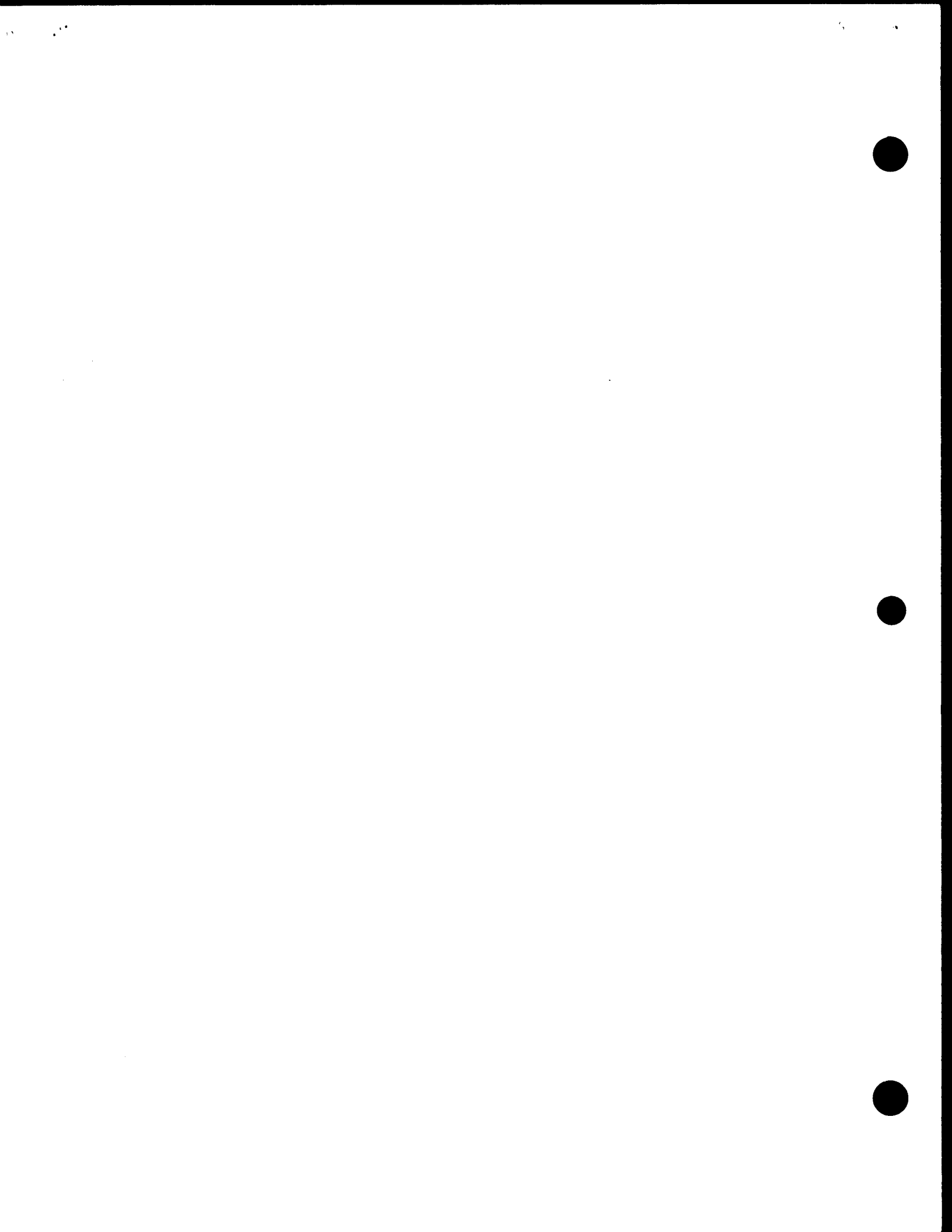


[Signature]  
Donna D. Sklens, Notary Public

I, Jeffrey Goldberg, the duly elected Assistant Secretary of North American Specialty Insurance Company and Washington International Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney given by said North American Specialty Insurance Company and Washington International Insurance Company, which is still in full force and effect.

IN WITNESS WHEREOF, I have set my hand and affixed the seals of the Companies this 22<sup>nd</sup> day of August, 2013.

[Signature]  
Jeffrey Goldberg, Vice President & Assistant Secretary of  
Washington International Insurance Company & North American Specialty Insurance Company







NAS SURETY GROUP

NORTH AMERICAN SPECIALTY INSURANCE COMPANY  
An New Hampshire Corporation

BALANCE SHEET AS OF DECEMBER 31 2012  
(Statutory Basis)

Valuation of securities on National Association of Insurance Commissioner Basis

ASSETS

LIABILITIES

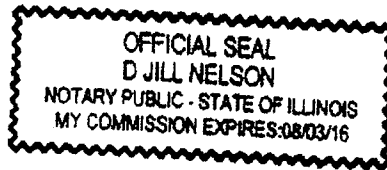
Cash	142,058,227	Reserve for Unearned Premiums	4,583,174
Bonds	228,583,216	Reserve for Losses and Loss Adjustment Expenses	26,841,818
Other Invested Assets	69,412,903	Funds Withheld	12,298,621
Other Admitted Assets	63,474,921	Taxes and Other Liabilities	96,080,147
		Surplus	363,725,507
<b>TOTAL ADMITTED ASSETS</b>	<u>503,529,267</u>	<b>TOTAL LIABILITIES &amp; POLICYHOLDERS' SURPLUS</b>	<u>503,529,267</u>

The undersigned, being duly sworn, says That he is Senior Vice President of North American Specialty Insurance Company, Schaumburg, Illinois that said company is a corporation duly organized, existing and engaged in business as a Surety Company by virtue of the Laws of the State of New Hampshire and authorized to do business in the State of New York and has duly complied with all the requirements of the laws of said State applicable to said Company and is duly qualified to act as Surety under such laws; that said Company has also complied with and is duly qualified to act as Surety under the Act of Congress approved: July 1947 6 U.S.C. sec. 6-13; and that to the best of his knowledge and belief the above statement is a full, true and correct statement of the financial condition of the said Company on the 31st of December, 2012.

Steven P. Andersen  
NORTH AMERICAN SPECIALTY INSURANCE COMPANY

Subscribed and sworn before me,  
this 07th day of May 2013

Notary Public





State of New York

DEPARTMENT OF FINANCIAL SERVICES

WHEREAS IT APPEARS THAT

North American Specialty Insurance Company

Home Office Address

Manchester, New Hampshire

Organized under the Laws of

New Hampshire

has complied with the necessary requirements of or pursuant to law, it is hereby

licensed to do within this State the business of

accident and health, fire, miscellaneous property, water damage, burglary and theft, glass, boiler and machinery, elevator, animal, collision, personal injury liability, property damage liability, workers' compensation and employers' liability, fidelity and surety, credit, motor vehicle and aircraft physical damage, marine and inland marine, marine protection and indemnity, residual value and legal services insurance, as specified in paragraph(s) 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22 and 29 of Section 1113(a) of the New York Insurance Law and also such workers' compensation insurance as may be incident to coverages contemplated under paragraphs 20 and 21 of Section 1113(a), including insurances described in the Longshoremen's and Harbor Workers' Compensation Act (Public Law No. 803, 69 Cong. as amended; 33 USC Section 901 et seq. as amended) to the extent permitted by certified copy of its charter document on file in this Department until July 1, 2014.

In Witness Whereof, I have hereunto set  
my hand and affixed the official seal of this  
Department at the City of Albany, New York, this  
1st day of July, 2013



Benjamin M. Lawsky  
Superintendent

By

*Jacqueline Catalfamo*

Jacqueline Catalfamo  
Special Deputy Superintendent



CERTIFICATE OF SOLVENCY UNDER SECTION 1111 OF THE NEW YORK  
INSURANCE LAW

STATE OF NEW YORK  
DEPARTMENT OF FINANCIAL SERVICES

It is hereby certified that

**NORTH AMERICAN SPECIALTY INSURANCE COMPANY**

Of Manchester, New Hampshire

a corporation organized under the laws of the State of New Hampshire and duly authorized to transact the business of insurance in this State, is qualified to become surety or guarantor on all bonds, undertakings, recognizances, guaranties and other obligations required or permitted by law; and that the said corporation is possessed of a capital and surplus including gross paid-in and contributed surplus and unassigned funds (surplus) aggregating the sum of \$356,124,214 (Capital \$4,800,000) as is shown by its sworn financial statement for the Third Quarter of September 30, 2012, on file in this Department, prior to audit.

The said corporation cannot lawfully expose itself to loss on any one risk or hazard to an amount exceeding 10% of its surplus to policyholders, unless it shall be protected in excess of that amount in the manner provided in Section 4118 of the Insurance Law of this State.

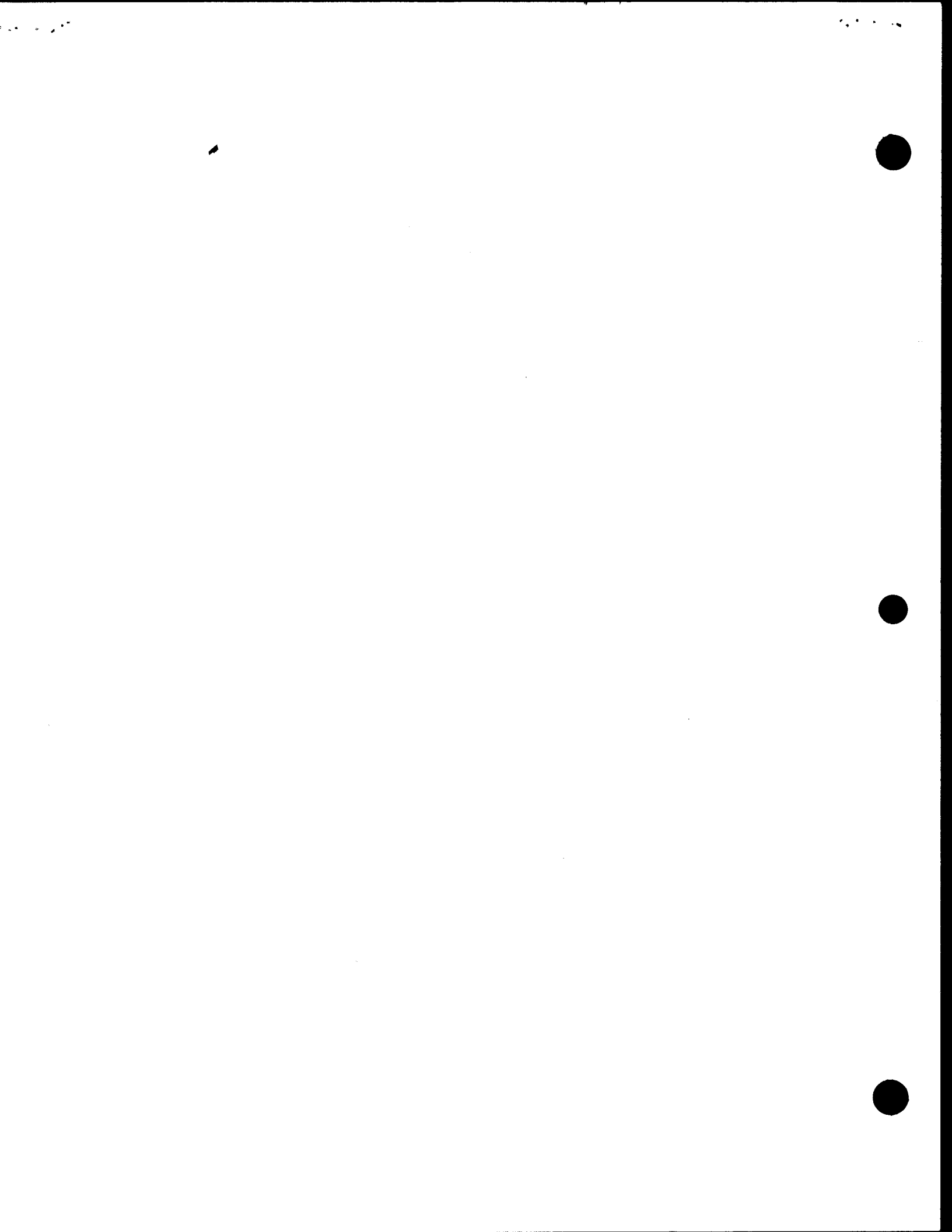


In Witness Whereof, I have here-  
unto set my hand and affixed the  
official seal of this Department  
at the City of Albany, this 11<sup>th</sup>  
day of January, 2013

**Benjamin M. Lawskey**  
Superintendent

By *Jacqueline Catalfamo*

**Jacqueline Catalfamo**  
Special Deputy Superintendent



Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 1)

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, \_\_\_\_\_

BOE Industries, Inc.

40-49 72nd Street

Woodside, New York 11377

hereinafter referred to as the "Principal", and \_\_\_\_\_

North American Specialty Insurance Company

475 North Martingale Road

Schaumburg, IL 60173

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

Six Million Four Hundred Forty Three Thousand Four Hundred Fifty One and 40/100

(\$ 6,443,451.40 ) 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: HH112WBLR - E-PIN: 85013B0101 - DDC PIN: 8502013HL0004C

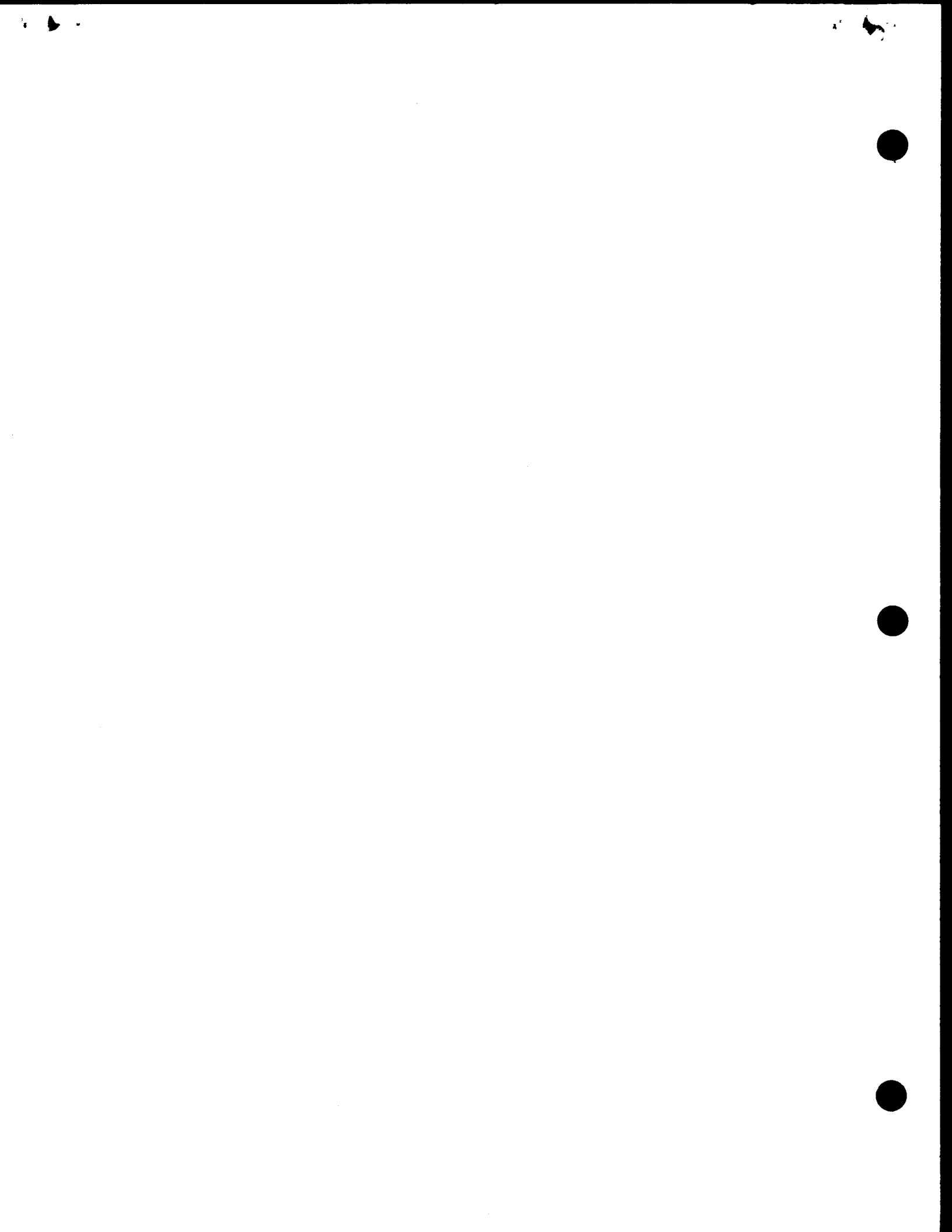
Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project

Borough of Manhattan

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.**

PAYMENT BOND (Page 2)

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

(a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.

(b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.

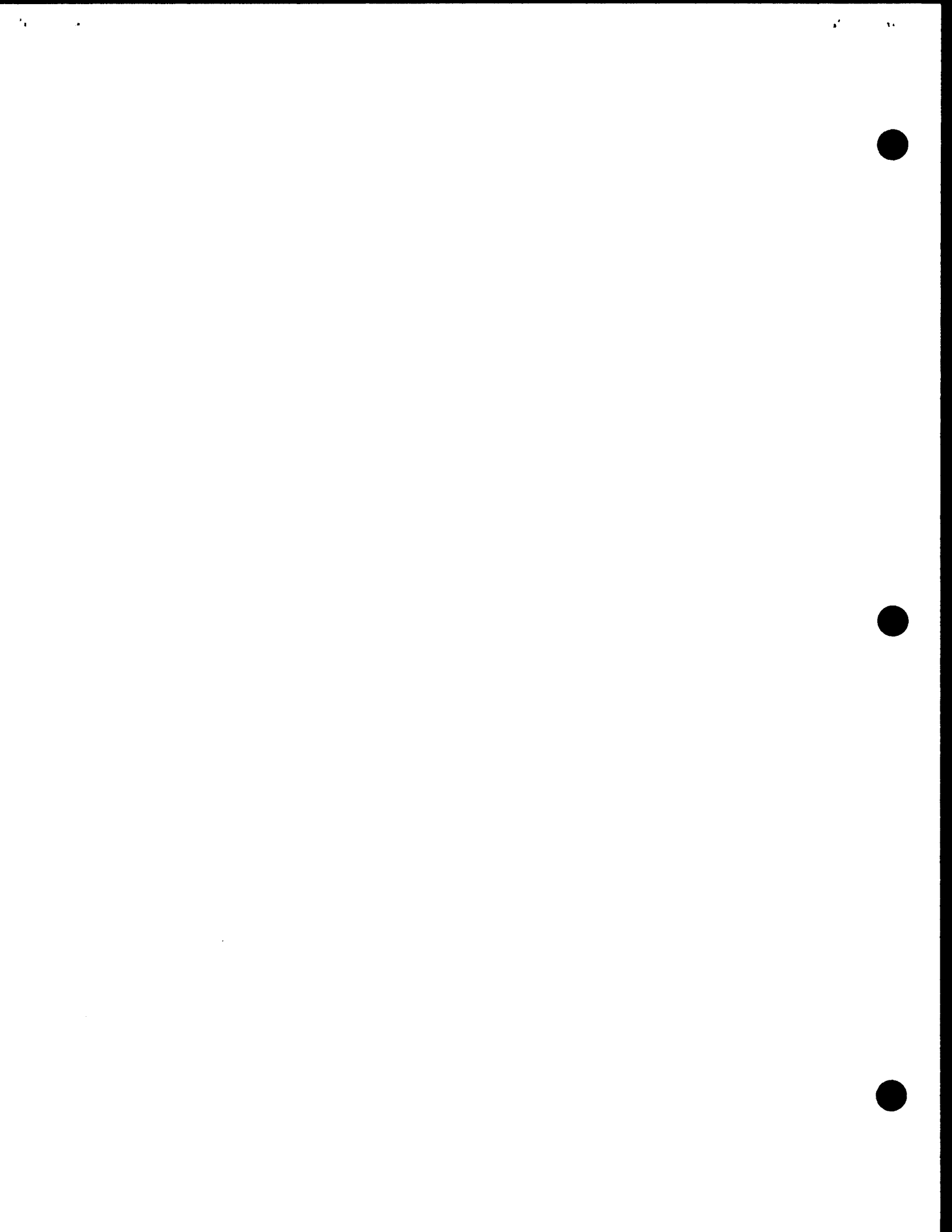
(c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.

(d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.

(e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.



**Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.**

PAYMENT BOND (Page 3)

IN WITNESS HEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this 22nd day of August, 2013.

(Seal) BOE Industries, Inc. (I.S.)  
Principal  
By: *[Signature]*

(Seal) North American Specialty Insurance Company  
Surety  
By: *Michele A. Dery*  
Michele A. Dery, Attorney-in-Fact

(Seal) n/a  
Surety  
By: \_\_\_\_\_

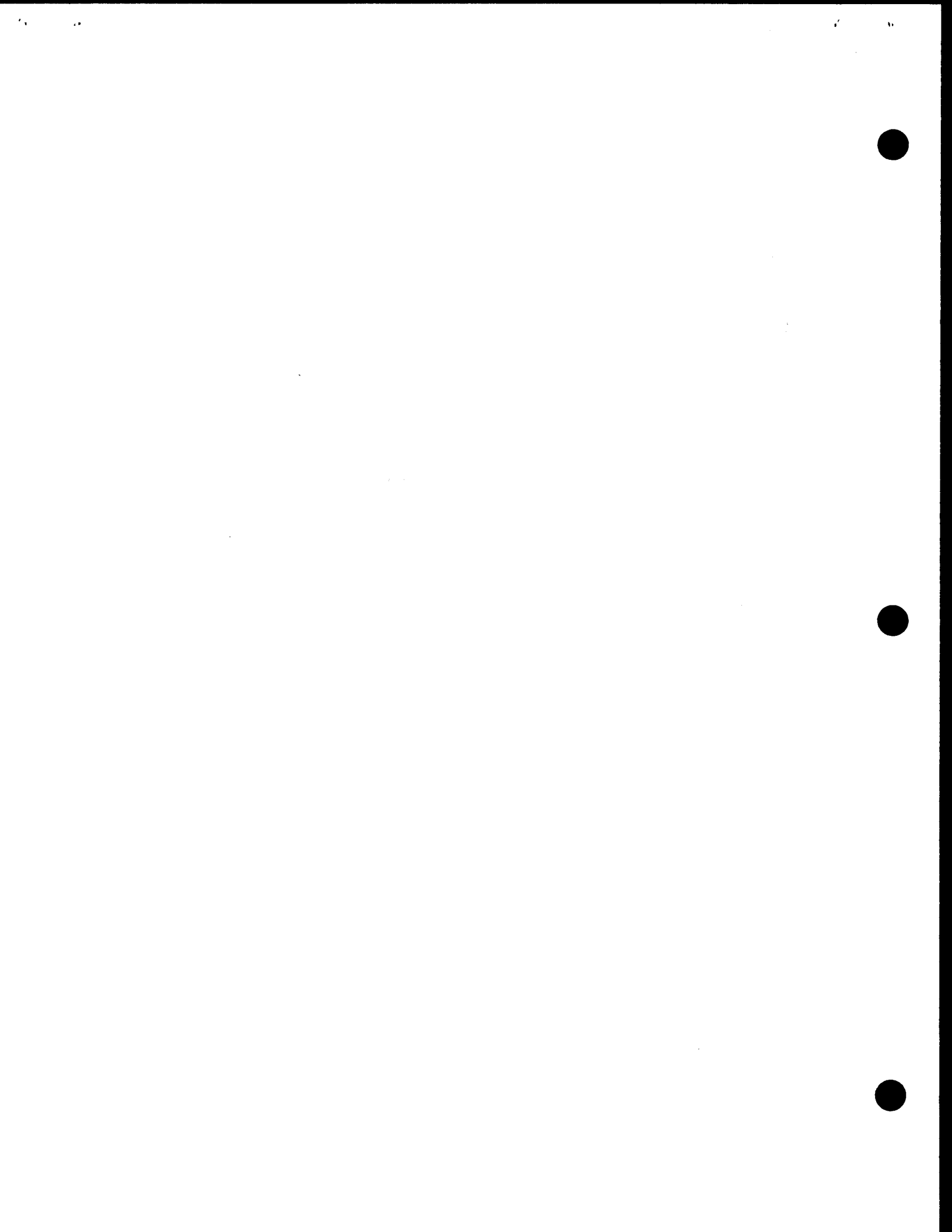
(Seal) n/a  
Surety  
By: \_\_\_\_\_

(Seal) n/a  
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.



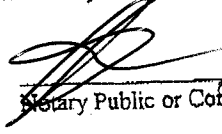
Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION

State of New York County of Queens ss:

On this 26th day of August, 2013 before me personally came Pankas Kumar to me known, who, being by me duly sworn did depose and say that he resides at 10 Schoolhouse Lane, Roslyn Height, NY that he is the President of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

  
ROBERT GUERRERO  
Notary Public, State of New York  
No. -4787428  
Qualified in Queens County  
Notary Public or Commissioner of Deeds in New York and Nassau Counties  
Commission Expires Oct. 31, 2013

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.

\* \* \* \* \*

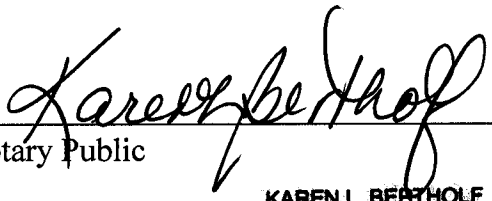
Affix Acknowledgments and Justification of Sureties



**NORTH AMERICAN SPECIALTY INSURANCE COMPANY**

State of New Jersey  
County of Essex

On this 22nd day of August, 2013 before me personally came Michele A. Dery, to me known, who, being by me duly sworn, did depose and say that she resides in West Caldwell, New Jersey and that she is the Attorney-in-Fact of North American Specialty Insurance Company described in and which executed the within instrument; that she knows the corporate seal of said corporation; that the seal affixed to the within instrument is such corporate seal; and that she signed the said instrument and affixed said seal as Attorney-in-Fact by authority of the Board of Directors of said corporation, and by authority of this office under the Standing Resolutions thereof.

  
\_\_\_\_\_  
Notary Public  
KAREN L. BERTHOLF  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires Sept. 19, 2015



100-44-10000  
100-44-10000  
100-44-10000



NAS SURETY GROUP

NORTH AMERICAN SPECIALTY INSURANCE COMPANY  
WASHINGTON INTERNATIONAL INSURANCE COMPANY

GENERAL POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, THAT North American Specialty Insurance Company, a corporation duly organized and existing under laws of the State of New Hampshire, and having its principal office in the City of Manchester, New Hampshire, and Washington International Insurance Company, a corporation organized and existing under the laws of the State of New Hampshire and having its principal office in the City of Schaumburg, Illinois, each does hereby make, constitute and appoint:

PETER T. DUFFY, MICHELE A. DERY, LISA JENKINS,

NOEL K. WALSH and BARBARA J. HANCOCK

JOINTLY OR SEVERALLY

Its true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver, for and on its behalf and as its act and deed, bonds or other writings obligatory in the nature of a bond on behalf of each of said Companies, as surety, on contracts of suretyship as are or may be required or permitted by law, regulation, contract or otherwise, provided that no bond or undertaking or contract or suretyship executed under this authority shall exceed the amount of:

FIFTY MILLION (\$50,000,000.00) DOLLARS

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Boards of Directors of both North American Specialty Insurance Company and Washington International Insurance Company at meetings duly called and held on the 9<sup>th</sup> of May, 2012:

"RESOLVED, that any two of the Presidents, any Managing Director, any Senior Vice President, any Vice President, any Assistant Vice President, the Secretary or any Assistant Secretary be, and each or any of them hereby is authorized to execute a Power of Attorney qualifying the attorney named in the given Power of Attorney to execute on behalf of the Company bonds, undertakings and all contracts of surety, and that each or any of them hereby is authorized to attest to the execution of any such Power of Attorney and to attach therein the seal of the Company; and it is

FURTHER RESOLVED, that the signature of such officers and the seal of the Company may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be binding upon the Company when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached."



By [Signature]  
Steven P. Anderson, Senior Vice President of Washington International Insurance Company  
& Senior Vice President of North American Specialty Insurance Company



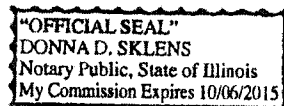
By [Signature]  
David M. Layman, Vice President of Washington International Insurance Company  
& Vice President of North American Specialty Insurance Company

IN WITNESS WHEREOF, North American Specialty Insurance Company and Washington International Insurance Company have caused their official seals to be hereunto affixed, and these presents to be signed by their authorized officers this 5<sup>th</sup> day of June, 2012.

North American Specialty Insurance Company  
Washington International Insurance Company

State of Illinois  
County of Cook ss:

On this 5<sup>th</sup> day of June, 2012, before me, a Notary Public personally appeared Steven P. Anderson, Senior Vice President of Washington International Insurance Company and Senior Vice President of North American Specialty Insurance Company and David M. Layman, Vice President of Washington International Insurance Company and Vice President of North American Specialty Insurance Company, personally known to me, who being by me duly sworn, acknowledged that they signed the above Power of Attorney as officers of and acknowledged said instrument to be the voluntary act and deed of their respective companies.



[Signature]  
Donna D. Sklens, Notary Public

I, Jeffrey Goldberg, the duly elected Assistant Secretary of North American Specialty Insurance Company and Washington International Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney given by said North American Specialty Insurance Company and Washington International Insurance Company, which is still in full force and effect.

IN WITNESS WHEREOF, I have set my hand and affixed the seals of the Companies this 22<sup>nd</sup> day of August, 2013.

[Signature]  
Jeffrey Goldberg, Vice President & Assistant Secretary of  
Washington International Insurance Company & North American Specialty Insurance Company





NAS SURETY GROUP

NORTH AMERICAN SPECIALTY INSURANCE COMPANY  
An New Hampshire Corporation

BALANCE SHEET AS OF DECEMBER 31 2012  
(Statutory Basis)

Valuation of securities on National Association of Insurance Commissioner Basis

ASSETS

LIABILITIES

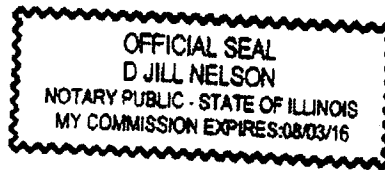
Cash	142,058,227	Reserve for Unearned Premiums	4,583,174
Bonds	228,583,216	Reserve for Losses and Loss Adjustment Expenses	26,841,818
Other Invested Assets	69,412,903	Funds Withheld	12,298,621
Other Admitted Assets	63,474,921	Taxes and Other Liabilities	96,080,147
		Surplus	363,725,507
<b>TOTAL ADMITTED ASSETS</b>	<u>503,529,267</u>	<b>TOTAL LIABILITIES &amp; POLICYHOLDERS' SURPLUS</b>	<u>503,529,267</u>

The undersigned, being duly sworn, says That he is Senior Vice President of North American Specialty Insurance Company, Schaumburg, Illinois that said company is a corporation duly organized, existing and engaged in business as a Surety Company by virtue of the Laws of the State of New Hampshire and authorized to do business in the State of New York and has duly complied with all the requirements of the laws of said State applicable to said Company and is duly qualified to act as Surety under such laws; that said Company has also complied with and is duly qualified to act as Surety under the Act of Congress approved: July 1947 6 U.S.C. sec. 6-13; and that to the best of his knowledge and belief the above statement is a full, true and correct statement of the financial condition of the said Company on the 31st of December, 2012.

Steven P. Andersen  
NORTH AMERICAN SPECIALTY INSURANCE COMPANY

Subscribed and sworn before me,  
this 07th day of May 2013

Notary Public





State of New York

DEPARTMENT OF FINANCIAL SERVICES

WHEREAS IT APPEARS THAT

North American Specialty Insurance Company

Home Office Address Manchester, New Hampshire

Organized under the Laws of New Hampshire

has complied with the necessary requirements of or pursuant to law, it is hereby

licensed to do within this State the business of

accident and health, fire, miscellaneous property, water damage, burglary and theft, glass, boiler and machinery, elevator, animal, collision, personal injury liability, property damage liability, workers' compensation and employers' liability, fidelity and surety, credit, motor vehicle and aircraft physical damage, marine and inland marine, marine protection and indemnity, residual value and legal services insurance, as specified in paragraph(s) 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22 and 29 of Section 1113(a) of the New York Insurance Law and also such workers' compensation insurance as may be incident to coverages contemplated under paragraphs 20 and 21 of Section 1113(a), including insurances described in the Longshoremen's and Harbor Workers' Compensation Act (Public Law No. 803, 69 Cong. as amended; 33 USC Section 901 et seq. as amended) to the extent permitted by certified copy of its charter document on file in this Department until July 1, 2014.

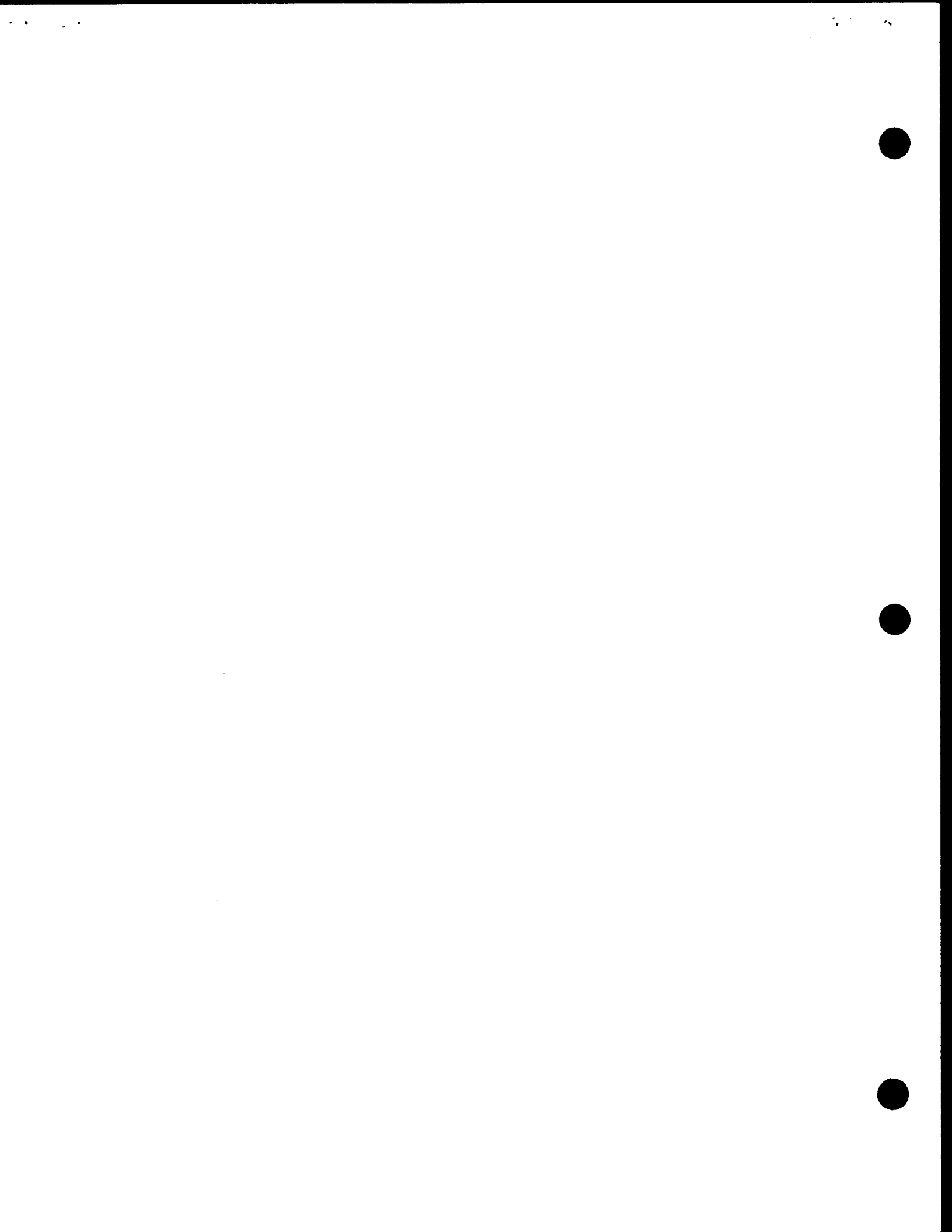
In Witness Whereof, I have hereunto set  
my hand and affixed the official seal of this  
Department at the City of Albany, New York, this  
1st day of July, 2013

Benjamin M. Lawsky  
Superintendent

By *Jacqueline Catalfamo*

Jacqueline Catalfamo  
Special Deputy Superintendent





CERTIFICATE OF SOLVENCY UNDER SECTION 1111 OF THE NEW YORK  
INSURANCE LAW

STATE OF NEW YORK  
DEPARTMENT OF FINANCIAL SERVICES

It is hereby certified that

**NORTH AMERICAN SPECIALTY INSURANCE COMPANY**

Of Manchester, New Hampshire

a corporation organized under the laws of the State of New Hampshire and duly authorized to transact the business of insurance in this State, is qualified to become surety or guarantor on all bonds, undertakings, recognizances, guaranties and other obligations required or permitted by law; and that the said corporation is possessed of a capital and surplus including gross paid-in and contributed surplus and unassigned funds (surplus) aggregating the sum of \$356,124,214 (Capital \$4,800,000) as is shown by its sworn financial statement for the Third Quarter of September 30, 2012, on file in this Department, prior to audit.

The said corporation cannot lawfully expose itself to loss on any one risk or hazard to an amount exceeding 10% of its surplus to policyholders, unless it shall be protected in excess of that amount in the manner provided in Section 4118 of the Insurance Law of this State.

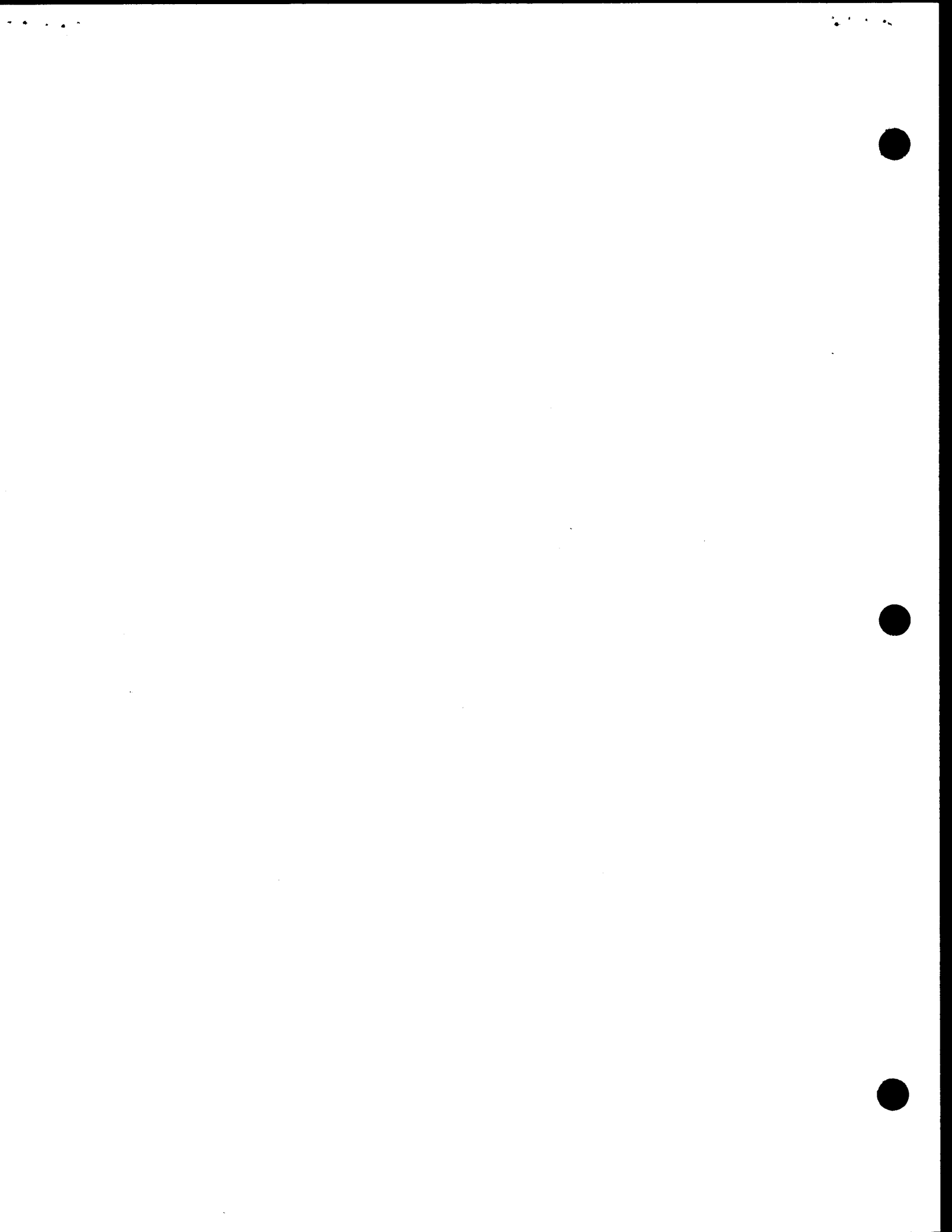


In Witness Whereof, I have here-  
unto set my hand and affixed the  
official seal of this Department  
at the City of Albany, this 11<sup>th</sup>  
day of January, 2013

**Benjamin M. Lawsky**  
Superintendent

By *Jacqueline Catalfamo*

**Jacqueline Catalfamo**  
Special Deputy Superintendent





**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 (Page 2)

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to (1) pay the City the cost to complete the contract as determined by the City in excess of the balance of the Contract held by the City, plus any damages or costs to which the City is entitled, up to the full amount of the above penal sum, (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof, or (3) tender a completion Contractor that is acceptable to the City. The Surety (Sureties) further agrees, at its option, either to notify the City that it elects to pay the city the cost of completion plus any applicable damages and costs under option (1) above, or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and, if the Surety elects to fully perform and complete the Work, then to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. If the Surety elects to tender payment pursuant to (1) above, then the Surety shall tender such amount within fifteen (15) business days notification from the City of the cost of completion. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and complete all Work as provided herein, or to tender a completion contractor.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, and waivers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to subcontractors shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal. Notwithstanding the above, if the City makes payments to the Principal before the time required by the contract that in the aggregate exceed \$100,000 or 10% of the Contract price, whichever is less, and that have not become earned prior to the Principal being found to be in default, then all payments made to the Principal before the time required by the Contract shall be added to the remaining contract value available to be paid for the completion of the Contract as if such sums had not been paid to the Principal, but shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and to complete all Work as provided herein, or to tender a completion contractor.

**Performance Bond #1 (Pages 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 (Page 3)

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

(Seal) \_\_\_\_\_ (L.S.)  
Principal

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

Bond Premium Rate \_\_\_\_\_

Bond Premium Cost \_\_\_\_\_

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

**Performance Bond #1 (Pages 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 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

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

\_\_\_\_\_  
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

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

\_\_\_\_\_  
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally appeared \_\_\_\_\_ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

\_\_\_\_\_  
Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

\* \* \* \* \*

Affix Acknowledgments and Justification of Sureties

**Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than \$5 Million.**

PERFORMANCE BOND #2 (Page 1)

PERFORMANCE BOND #2

KNOW ALL PERSONS BY THESE PRESENTS, That we, \_\_\_\_\_

hereinafter referred to as the "Principal", and \_\_\_\_\_

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

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

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

**Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than \$5 Million.**

PERFORMANCE BOND #2 (Page2)

**NOW, THEREFORE**, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to either (1) pay the full amount of the above penal sum in complete discharge and exoneration of this bond and of all the liabilities of the Surety relating to this bond, or (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof. The Surety (Sureties) further agrees, at its option, either to tender the penal sum or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to commence and to complete all Work as provided herein.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any Work to be performed or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal.

**Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than \$5 Million.**

PERFORMANCE BOND #2 (Page 3)

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

(Seal) \_\_\_\_\_ (L.S.)  
Principal

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

Bond Premium Rate \_\_\_\_\_

Bond Premium Cost \_\_\_\_\_

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

**Performance Bond #2 (Pages 84 to 87): Use if the total contract price is more than \$5 Million.**

PERFORMANCE BOND #2 (Page 4)

**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 (Page 1)

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

hereinafter referred to as the "Principal", and \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so



**Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.**

PAYMENT BOND (Page 2)

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

(a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.

(b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.

(c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.

(d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.

(e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

**Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.**

PAYMENT BOND (Page 3)

IN WITNESS HEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal) \_\_\_\_\_ (L.S.)  
Principal

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

(Seal) \_\_\_\_\_  
Surety

By: \_\_\_\_\_

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

**Payment Bond (Pages 88 to 91): Use for any contract for which a Payment Bond is required.**

PAYMENT BOND (Page 4)

**ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION**

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

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

\_\_\_\_\_  
Notary Public or Commissioner of Deeds

**ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP**

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

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

\_\_\_\_\_  
Notary Public or Commissioner of Deeds

**ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL**

State of \_\_\_\_\_ County of \_\_\_\_\_ ss:

On this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally appeared to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

\_\_\_\_\_  
Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

\* \* \* \* \*

Affix Acknowledgments and Justification of Sureties

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

LABOR LAW §220 PREVAILING WAGE SCHEDULE

Workers, Laborers and Mechanics employed on a public work project must receive not less than the prevailing rate of wage and benefits for the classification of work performed by each upon such public work. 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.

Pursuant to Labor Law §220 (3) 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.

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](http://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 1<sup>st</sup> of each succeeding year. Final schedules are published on or about July 1<sup>st</sup> in the City Record and on our web site at [www.comptroller.nyc.gov](http://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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Prevailing Rate Schedule Information: The information below is intended to assist you in meeting your prevailing wage rate obligation.

Covered Workers: Any and all individuals who are engaged, employed or otherwise occupied as Workers, Laborers or Mechanics on the public work site.

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.

Wasył Kinach, P.E.  
Director of Classifications  
Bureau of Labor Law

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**220 SCHEDULE OF PREVAILING WAGES AND SUPPLEMENTAL BENEFITS ADDENDUM  
EFFECTIVE PERIOD JANUARY 1, 2013 THROUGH JUNE 30, 2013**

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List of Amended Classifications

1. BOILERMAKER
2. CEMENT MASON
3. DERRICKPERSON AND RIGGER
4. DRIVER: TRUCK (TEAMSTER)
5. ENGINEER - FIELD (BUILDING CONSTRUCTION)
6. ENGINEER - OPERATING
7. HEAT AND FROST INSULATOR
8. HOUSE WRECKER
9. IRON WORKER - ORNAMENTAL
10. IRON WORKER - STRUCTURAL
11. MASON TENDER
12. MASON TENDER (INTERIOR DEMOLITION WORKER)
13. MOSAIC MECHANIC
14. PAPERHANGER
15. PLASTERER
16. PLASTERER - TENDER
17. PLUMBER
18. PLUMBER (MECHANICAL EQUIPMENT AND SERVICE)
19. PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME CONSTRUCTION)
20. ROOFER

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

21. SHEET METAL WORKER

22. SIGN ERECTOR

23. STEAMFITTER

24. STEAMFITTER - REFRIGERATION AND AIR CONDITIONER

25. TILE FINISHER

26. TILE LAYER - SETTER



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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§220 PREVAILING WAGE SCHEDULE

**ASBESTOS HANDLER**

(Hazardous Material; Disturbs, removes, encapsulates, repairs, or encloses friable asbestos material)

**Asbestos Handler**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$35.10

Supplemental Benefit Rate per Hour: \$14.85

**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)

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**BLASTER**

**Blaster**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$43.20

Supplemental Benefit Rate per Hour: \$37.29

**Blaster (Hydraulic)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$43.95

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$37.29

**Blaster - Trac Drill Hydraulic**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$38.96

Supplemental Benefit Rate per Hour: \$37.29

**Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$38.24

Supplemental Benefit Rate per Hour: \$37.29

**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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$37.29

Supplemental Benefit Rate per Hour: \$37.29

**Blaster - Powder Carriers**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$33.73

Supplemental Benefit Rate per Hour: \$37.29

**Blaster - Hydraulic Trac Drill Chuck Tender**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$32.57

Supplemental Benefit Rate per Hour: \$37.29

**Blaster - Chuck Tender & Nipper**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$31.88

Supplemental Benefit Rate per Hour: \$37.29

**Blaster - Magazine Keepers: (Watch Person)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$19.26

Supplemental Benefit Rate per Hour: \$37.29

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**Overtime Description**

For Blaster - Magazine Keepers: (Watch Person) only - time and one half the regular rate for work after an 8 hour day, Saturday, Sunday and holidays listed below.

**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)

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**BOILERMAKER**

**Boilermaker**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$47.98

Supplemental Benefit Rate per Hour: \$37.88

Supplemental Note: The above rate applies to repair or maintenance and new construction; For time and one half overtime - \$56.36; For double overtime - \$74.86.

Effective Period: 1/1/2013 - 3/31/2013

Wage Rate per Hour: \$49.47

Supplemental Benefit Rate per Hour: \$39.48

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Supplemental Note: The above rate applies to repair or maintenance and new construction; For time and one half overtime - \$58.78; For double overtime - \$78.07.

Effective Period: 4/1/2013 - 6/30/2013

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.

### 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)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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**BRICKLAYER**

**Bricklayer**

Effective Period: 7/1/2012 - 6/30/2013

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)

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**CARPENTER - BUILDING COMMERCIAL**

**Building Commercial**

Effective Period: 7/1/2012 - 6/30/2013

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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

### Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day  
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)

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## CARPENTER - HEAVY CONSTRUCTION WORK (Construction of Engineering Structures and Building Foundations)

### Heavy Construction Work

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$46.74

Supplemental Benefit Rate per Hour: \$42.37

### Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

### Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day  
President's Day



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Presidential Election Day  
Thanksgiving Day  
Christmas Day

**Paid Holidays**

None

**Shift Rates**

Off shift work, commencing between 5:00 P.M. and 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)

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**CEMENT & CONCRETE WORKER**

**Cement & Concrete Worker**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$38.98

Supplemental Benefit Rate per Hour: \$25.67

Supplemental Note: \$28.42 on Saturdays; \$31.17 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**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)

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**CEMENT MASON**

**Cement Mason**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: **\$42.50**

Supplemental Benefit Rate per Hour: **\$39.06**

Supplemental Note: Overtime supplemental benefit rate per hour: **\$57.56**

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: **\$37.63**

Supplemental Benefit Rate per Hour: **\$39.06**

Supplemental Note: Overtime supplemental benefit rate per hour: **\$57.56**

**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

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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**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.

(Local #780)

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**CORE DRILLER**

**Core Driller**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$35.44**

Supplemental Benefit Rate per Hour: **\$19.75**

**Core Driller Helper**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$28.60**

Supplemental Benefit Rate per Hour: **\$19.75**

**Core Driller Helper(Third year in the industry)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$25.74**

Supplemental Benefit Rate per Hour: **\$19.75**

**Core Driller Helper (Second year in the industry)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$22.88**

Supplemental Benefit Rate per Hour: **\$19.75**

**Core Driller Helper (First year in the industry)**

Effective Period: 7/1/2012 - 6/30/2013

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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Double time the regular rate for Sunday.  
Time and one half the regular rate for work on the following holiday(s).

### **Paid Holidays**

New Year's Day  
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)

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## **DERRICKPERSON AND RIGGER**

### **Derrick Person & Rigger**

Effective Period: 7/1/2012 - 12/31/2012

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.

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$41.00

Supplemental Benefit Rate per Hour: \$46.07

Supplemental Note: The above supplemental rate applies for work performed in Manhattan, Bronx, Brooklyn and Queens. \$47.49 - For work performed in Staten Island.

### **Derrick Person & Rigger - Site Work**

For site work where no rigging is involved.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$30.00

Supplemental Benefit Rate per Hour: \$31.32

### **Overtime Description**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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 overtime 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)

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## DIVER

### Diver (Marine)

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$58.95

Supplemental Benefit Rate per Hour: \$42.37

### Diver Tender (Marine)

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$42.10

Supplemental Benefit Rate per Hour: \$42.37

### 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).

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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)

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**DOCKBUILDER - PILE DRIVER**

**Dockbuilder - Pile Driver**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$46.74

Supplemental Benefit Rate per Hour: \$42.37

**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**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

One

### 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 the straight time hourly wage for 9 hours and the straight time supplemental benefits for 8 hours.

(Carpenters District Council)

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## DRIVER: TRUCK (TEAMSTER)

### Driver - Automobile Chauffeur (Dump Truck)

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$35.84

Supplemental Benefit Rate per Hour: \$36.93

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$37.01

Supplemental Benefit Rate per Hour: \$38.65

### Driver - Heavy Equipment Trailer Driver

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$37.34

Supplemental Benefit Rate per Hour: \$36.93

Note: For time and one half overtime Wage Rate - \$53.76; for double time overtime Wage Rate - \$71.68

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$38.51

Supplemental Benefit Rate per Hour: \$38.65

Note: For time and one half overtime Wage Rate - \$55.51; for double time overtime Wage Rate - \$74.01

### Driver - Euclid & Turnapull Operator

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$36.41

Supplemental Benefit Rate per Hour: \$36.93

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$37.57

Supplemental Benefit Rate per Hour: \$38.65

### Driver - Six Wheeler(3 Axle) Tractors & Trailers

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Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$36.84

Supplemental Benefit Rate per Hour: \$36.93

Note: For time and one half overtime Wage Rate - \$54.62; for double time overtime Wage Rate - \$72.82

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$38.01

Supplemental Benefit Rate per Hour: \$38.65

Note: For time and one half overtime Wage Rate - \$56.36; for double time overtime Wage Rate - \$75.14

### Driver - Boom Truck

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$37.09

Supplemental Benefit Rate per Hour: \$36.93

Note: For time and one half overtime Wage Rate - \$54.62; for double time overtime Wage Rate - \$72.82

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$38.26

Supplemental Benefit Rate per Hour: \$38.65

Note: For time and one half overtime Wage Rate - \$56.36; for double time overtime Wage Rate - \$75.14

### 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).

President's Day

Columbus Day

Veteran's Day

Day after Thanksgiving

Triple time the regular rate for work on the following holiday(s).

New Year's Day

Memorial Day

Independence Day

Labor Day

Presidential Election Day

Thanksgiving Day

Christmas Day

### Paid Holidays

New Year's Day

President's Day



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Veteran's Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

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**Driver - Redi-Mix Driver (Sand & Gravel)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$37.47

Supplemental Benefit Rate per Hour: \$38.65

**Overtime Description**

For Paid Holidays: Employees working two (2) days in the calendar week in which the holiday falls are to be 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

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

(Local #282)

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**ELECTRICIAN**

(Including all low voltage cabling carrying data; video; and voice in combination with data and or video.)

**Electrician "A" (Regular Day)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$51.00

Supplemental Benefit Rate per Hour: \$42.45

**Electrician "A" (Regular Day Overtime)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$76.50

Supplemental Benefit Rate per Hour: \$45.13

**Electrician "A" (Day Shift)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$51.00

Supplemental Benefit Rate per Hour: \$42.45

**Electrician "A" (Day Shift Overtime After 8 hours)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$76.50

Supplemental Benefit Rate per Hour: \$45.13

**Electrician "A" (Swing Shift)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$59.84

Supplemental Benefit Rate per Hour: \$48.20

**Electrician "A" (Swing Shift Overtime After 7.5 hours)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$89.76

Supplemental Benefit Rate per Hour: \$51.36

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**Electrician "A" (Graveyard Shift)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$67.03

Supplemental Benefit Rate per Hour: \$53.07

**Electrician "A" (Graveyard Shift Overtime After 7 hours)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$100.55

Supplemental Benefit Rate per Hour: \$56.60

**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.

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**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,

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$25.30

Supplemental Benefit Rate per Hour: \$17.52

**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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$37.95

Supplemental Benefit Rate per Hour: \$18.85

**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)

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**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)

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**Alarm Technician**

Effective Period: 7/1/2012 - 3/9/2013

Wage Rate per Hour: **\$29.90**

Supplemental Benefit Rate per Hour: **\$13.70**

Supplemental Note: **\$12.20** only after 8 hours worked in a day

Effective Period: 3/10/2013 - 6/30/2013

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

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(Local #3)

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**ELECTRICIAN-STREET LIGHTING WORKER**

**Electrician - Electro Pole Electrician**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$51.00

Supplemental Benefit Rate per Hour: \$44.18

**Electrician - Electro Pole Foundation Installer**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$38.66

Supplemental Benefit Rate per Hour: \$34.12

**Electrician - Electro Pole Maintainer**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$33.10

Supplemental Benefit Rate per Hour: \$30.84

**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

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(Local #3)

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## ELEVATOR CONSTRUCTOR

### Elevator Constructor

Effective Period: 7/1/2012 - 3/16/2013

Wage Rate per Hour: \$55.20

Supplemental Benefit Rate per Hour: \$32.78

Effective Period: 3/17/2013 - 6/30/2013

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)

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§220 PREVAILING WAGE SCHEDULE

## ELEVATOR REPAIR & MAINTENANCE

### Elevator Service/Modernization Mechanic

Effective Period: 7/1/2012 - 3/16/2013

Wage Rate per Hour: \$43.79

Supplemental Benefit Rate per Hour: \$31.37

Effective Period: 3/17/2013 - 6/30/2013

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)

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## ENGINEER

### Engineer - Heavy Construction Operating Engineer I



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Cherry-pickers 20 tons and over and Loaders (rubber tired and/or tractor type with a manufacturer's minimum rated capacity of six cubic yards and over).

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$58.75

Supplemental Benefit Rate per Hour: \$31.07

Supplemental Note: \$55.74 on overtime

Shift Wage Rate: \$94.00

**Engineer - Heavy Construction Operating Engineer II**

Backhoes, Basin Machines, Groover, Mechanical Sweepers, Bobcat, Boom Truck, Barrier Transport (Barrier Mover) & machines of similar nature. Operation of Churn Drills and machines of a similar nature, Stetco Silent Hoist and machines of similar nature, Vac-Alls, Meyers Machines, John Beam and machines of a similar nature, Ross Carriers and Travel Lifts and machines of a similar nature, Bulldozers, Scrapers and Turn-a-Pulls: Tugger Hoists (Used exclusively for handling excavated material); Tractors with attachments, Hyster and Roustabout Cranes, Cherry-pickers. Austin Western, Grove and machines of a similar nature, Scoopmobiles, Monorails, Conveyors, Trenchers: Loaders-Rubber Tired and Tractor: Barber Greene and Eimco Loaders and Eimco Backhoes; Mighty Midget and similar breakers and Tampers, Curb and Gutter Pavers and Motor Patrol, Motor Graders and all machines of a similar nature. Locomotives 10 Tons or under. Mini-Max, Break-Tech and machines of a similar nature; Milling machines, robotic and demolition machines and machines of a similar nature, shot blaster, skid steer machines and machines of a similar nature including bobcat, pile rig rubber-tired excavator (37,000 lbs. and under), 2 man auger.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$57.00

Supplemental Benefit Rate per Hour: \$31.07

Supplemental Note: \$55.74 on overtime

Shift Wage Rate: \$91.20

**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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$56.74

Supplemental Benefit Rate per Hour: \$31.07

Supplemental Note: \$55.74 on overtime

Shift Wage Rate: \$90.78

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**Engineer - Heavy Construction Maintenance Engineer II**

On Base Mounted Tower Cranes

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$74.44

Supplemental Benefit Rate per Hour: \$31.07

Supplemental Note: \$55.74 on overtime

Shift Wage Rate: \$119.10

**Engineer - Heavy Construction Maintenance Engineer III**

On Generators, Light Towers

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$37.56

Supplemental Benefit Rate per Hour: \$31.07

Supplemental Note: \$55.74 on overtime

Shift Wage Rate: \$60.10

**Engineer - Heavy Construction Maintenance Engineer IV**

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$38.53

Supplemental Benefit Rate per Hour: \$31.07

Supplemental Note: \$55.74 on overtime

Shift Wage Rate: \$61.65

**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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$54.09

Supplemental Benefit Rate per Hour: \$31.07

Supplemental Note: \$55.74 on overtime

Shift Wage Rate: \$86.54

**Engineer - Heavy Construction Oilers I**

Gradalls, Cold Planer Grader, Concrete Pumps, Driving Truck Cranes, Driving and Operating Fuel and Grease Trucks.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$51.19

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Supplemental Benefit Rate per Hour: \$31.07  
Supplemental Note: \$55.74 on overtime  
Shift Wage Rate: \$81.90

**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: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$35.50  
Supplemental Benefit Rate per Hour: \$31.07  
Supplemental Note: \$55.74 on overtime  
Shift Wage Rate: \$56.80

**Engineer - Steel Erection Maintenance Engineers**

Derrick, Travelers, Tower, Crawler Tower and Climbing Cranes

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$54.33  
Supplemental Benefit Rate per Hour: \$29.66  
Supplemental Note: \$53.17 on overtime  
Shift Wage Rate: \$86.93

**Engineer - Steel Erection Oiler I**

On a Truck Crane

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$50.91  
Supplemental Benefit Rate per Hour: \$29.66  
Supplemental Note: \$53.17 on overtime  
Shift Wage Rate: \$81.46

**Engineer - Steel Erection Oiler II**

On a Crawler Crane

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$39.04  
Supplemental Benefit Rate per Hour: \$29.66  
Supplemental Note: \$53.17 on overtime  
Shift Wage Rate: \$62.46

**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.

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**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

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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$51.62

Supplemental Benefit Rate per Hour: \$29.66

Supplemental Note: \$53.17 on overtime

**Engineer - Building Work Maintenance Engineers II**

On Pumps, Generators, Mixers and Heaters

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$40.34

Supplemental Benefit Rate per Hour: \$29.66

Supplemental Note: \$53.17 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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Cranes: Driving and Operating Fuel and Grease Trucks, Cherrypickers (hydraulic cranes) over 70,000 GVW, and machines of a similar nature.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$49.12

Supplemental Benefit Rate per Hour: \$29.66

Supplemental Note: \$53.17 on overtime

### Engineer - Building Work Oilers II

Oilers on Crawler Cranes, Backhoes, Trenching Machines, Gunite Machines, Compressors (three or more in Battery).

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$36.75

Supplemental Benefit Rate per Hour: \$29.66

Supplemental Note: \$53.17 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)

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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**ENGINEER - CITY SURVEYOR AND CONSULTANT**

**Party Chief**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$34.61

Supplemental Benefit Rate per Hour: \$17.30

**Instrument Person**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$28.59

Supplemental Benefit Rate per Hour: \$17.30

**Rodperson**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$24.79

Supplemental Benefit Rate per Hour: \$17.30

**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)

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**ENGINEER - FIELD (BUILDING CONSTRUCTION)**

**(Construction of Building Projects, Concrete Superstructures, etc.)**

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**Field Engineer - BC Party Chief**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$53.64

Supplemental Benefit Rate per Hour: \$26.95

Supplemental Note: Overtime Benefit Rate - \$37.48 per hour (time & one half) \$48.00 per hour (double time).

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$55.74

Supplemental Benefit Rate per Hour: \$29.73

Supplemental Note: Overtime Benefit Rate - \$41.40 per hour (time & one half) \$53.06 per hour (double time).

**Field Engineer - BC Instrument Person**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$41.94

Supplemental Benefit Rate per Hour: \$26.95

Supplemental Note: Overtime Benefit Rate - \$37.48 per hour (time & one half) \$48.00 per hour (double time).

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$43.30

Supplemental Benefit Rate per Hour: \$29.73

Supplemental Note: Overtime Benefit Rate - \$41.40 per hour (time & one half) \$53.06 per hour (double time).

**Field Engineer - BC Rodperson**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$27.52

Supplemental Benefit Rate per Hour: \$26.95

Supplemental Note: Overtime Benefit Rate - \$37.48 per hour (time & one half) \$48.00 per hour (double time).

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$27.97

Supplemental Benefit Rate per Hour: \$29.73

Supplemental Note: Overtime Benefit Rate - \$41.40 per hour (time & one half) \$53.06 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

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)

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**ENGINEER - FIELD (HEAVY CONSTRUCTION)**  
**(Construction of Roads, Tunnels, Bridges, Sewers, Building Foundations,  
Engineering Structures etc.)**

**Field Engineer - HC Party Chief**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$60.28**

Supplemental Benefit Rate per Hour: **\$29.73**

Supplemental Note: Overtime benefit rate - \$41.40 per hour (time & one half), \$53.06 per hour (double time).

**Field Engineer - HC Instrument Person**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$44.28**

Supplemental Benefit Rate per Hour: **\$29.73**

Supplemental Note: Overtime benefit rate - \$41.40 per hour (time & one half), \$53.06 per hour (double time).

**Field Engineer - HC Rodperson**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$37.11**

Supplemental Benefit Rate per Hour: **\$29.73**

Supplemental Note: Overtime benefit rate - \$41.40 per hour (time & one half), \$53.06 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



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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)

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## **ENGINEER - FIELD (STEEL ERECTION)**

### **Field Engineer - Steel Erection Party Chief**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$54.50

Supplemental Benefit Rate per Hour: \$26.95

Supplemental Note: Overtime benefit rate - \$37.48 per hour (time & one half), \$48.00 per hour (double time).

### **Field Engineer - Steel Erection Instrument Person**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$42.63

Supplemental Benefit Rate per Hour: \$26.95

Supplemental Note: Overtime benefit rate - \$37.48 per hour (time & one half), \$48.00 per hour (double time).

### **Field Engineer - Steel Erection Rodperson**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$28.84

Supplemental Benefit Rate per Hour: \$26.95

Supplemental Note: Overtime benefit rate - \$37.48 per hour (time & one half), \$48.00 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

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)

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## **ENGINEER - OPERATING**

### **Operating Engineer - Road & Heavy Construction I**

Back Filling Machines, Cranes, Mucking Machines and Dual Drum Paver.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$64.38

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$103.01

### **Operating Engineer - Road & Heavy Construction II**

Backhoes, Power Shovels, Hydraulic Clam Shells, Steel Erection, Moles and machines of a similar nature.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$66.70

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: 51.85 overtime hours

Shift Wage Rate: \$106.72

### **Operating Engineer - Road & Heavy Construction III**

Mine Hoists, Cranes, etc. (Used as Mine Hoists)

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$68.86

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$110.18

### **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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$67.21

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$107.54

**Operating Engineer - Road & Heavy Construction V**

Pile Drivers & Rigs (employing Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$65.86  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$105.38

**Operating Engineer - Road & Heavy Construction VI**

Mixers (Concrete with loading attachment), Concrete Pavers, Cableways, Land Derricks, Power Houses (Low Air Pressure Units).

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$62.51  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$100.02

**Operating Engineer - Road & Heavy Construction VII**

Barrier Movers , Barrier Transport and Machines of a Similar Nature.

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$50.27  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$80.43

**Operating Engineer - Road & Heavy Construction VIII**

Utility Compressors

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$36.37  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$46.38

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$38.78  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Shift Wage Rate: \$49.16

**Operating Engineer - Road & Heavy Construction IX**

Horizontal Boring Rig

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$56.24

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$89.98

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$59.39

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$95.02

**Operating Engineer - Road & Heavy Construction X**

Elevators (manually operated as personnel hoist).

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$54.50

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$87.20

**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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$42.11

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$67.38

**Operating Engineer - Road & Heavy Construction XII**

All Drills and Machines of a similar nature.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$63.18

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$101.09

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**Operating Engineer - Road & Heavy Construction XIII**

Concrete Pumps, Concrete Plant, Well Drilling Machines, Stone Crushers, Double Drum Hoist, Power Houses (other than above).

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$61.14

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$97.82

**Operating Engineer - Road & Heavy Construction XIV**

Concrete Mixer

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$58.34

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$93.49

**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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$39.03

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$62.45

**Operating Engineer - Road & Heavy Construction XVI**

Concrete Breaking Machines, Single Drum Hoists, Locomotives (over ten tons) and Dinkies over ten tons, Hydraulic Crane-Second Engineer.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$55.73

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$89.17

**Operating Engineer - Road & Heavy Construction XVII**

On-Site concrete plant engineer, On-site Asphalt Plant Engineer, and Vibratory console.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$56.19  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$89.90

**Operating Engineer - Road & Heavy Construction XVIII**

Tower Crane

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$81.09  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$129.74

**Operating Engineer - Paving I**

Asphalt Spreaders, Autogrades (C.M.I.), Roto/Mil

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$59.25  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$94.80

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$62.51  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$100.02

**Operating Engineer - Paving II**

Asphalt Roller

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$57.65  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$92.24

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$60.85  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$97.36

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**Operating Engineer - Paving III**

Asphalt Plants

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$48.46

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$77.54

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$51.32

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$82.11

**Operating Engineer - Concrete I**

Cranes

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$63.49

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

**Operating Engineer - Concrete II**

Compressors

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$36.91

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

**Operating Engineer - Concrete III**

Micro-traps (Negative Air Machines), Vac-All Remediation System.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$50.31

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

**Operating Engineer - Steel Erection I**

Three Drum Derricks

Effective Period: 7/1/2012 - 12/31/2012

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$67.62**  
Supplemental Benefit Rate per Hour: **\$28.65**  
Supplemental Note: **\$51.85** overtime hours  
Shift Wage Rate: **\$108.19**

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: **\$70.50**  
Supplemental Benefit Rate per Hour: **\$28.65**  
Supplemental Note: **\$51.85** overtime hours  
Shift Wage Rate: **\$112.80**

**Operating Engineer - Steel Erection II**

Cranes, 2 Drum Derricks, Hydraulic Cranes and Fork Lifts.

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: **\$64.91**  
Supplemental Benefit Rate per Hour: **\$28.65**  
Supplemental Note: **\$51.85** overtime hours  
Shift Wage Rate: **\$103.86**

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: **\$67.71**  
Supplemental Benefit Rate per Hour: **\$28.65**  
Supplemental Note: **\$51.85** overtime hours  
Shift Wage Rate: **\$108.34**

**Operating Engineer - Steel Erection III**

Compressors, Welding Machines.

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: **\$37.87**  
Supplemental Benefit Rate per Hour: **\$28.65**  
Supplemental Note: **\$51.85** overtime hours  
Shift Wage Rate: **\$60.59**

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: **\$39.86**  
Supplemental Benefit Rate per Hour: **\$28.65**  
Supplemental Note: **\$51.85** overtime hours  
Shift Wage Rate: **\$63.78**

**Operating Engineer - Steel Erection IV**

Compressors - Not Combined with Welding Machine.

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: **\$36.00**



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$57.60

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$37.93  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours  
Shift Wage Rate: \$60.69

**Operating Engineer - Building Work I**

Forklifts, House Cars, Rack and Pinion, Plaster (Platform machine), Plaster Bucket, Concrete Pump and all other equipment used for hoisting material.

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$53.09  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$55.46  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours

**Operating Engineer - Building Work II**

Compressors, Welding Machines (Cutting Concrete-Tank Work), Paint Spraying, Sandblasting, Pumps (with the exclusion of Concrete Pumps), House Car (settlement basis only), All Engines irrespective of Power (Power-Pac) used to drive Auxiliary Equipment, Air, Hydraulic, etc.

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$39.35  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$41.32  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours

**Operating Engineer - Building Work III**

Double Drum

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$60.66  
Supplemental Benefit Rate per Hour: \$28.65  
Supplemental Note: \$51.85 overtime hours

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$63.25

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

**Operating Engineer - Building Work IV**

Stone Derrick, Cranes, Hydraulic Cranes Boom Trucks.

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$64.35

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$67.05

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

**Operating Engineer - Building Work V**

Dismantling and Erection of Cranes, Relief Engineer.

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$59.17

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$61.72

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

**Operating Engineer - Building Work VI**

4 Pole Hoist, Single Drum Hoists.

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$58.53

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$61.06

Supplemental Benefit Rate per Hour: \$28.65

Supplemental Note: \$51.85 overtime hours

**Overtime Description**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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  
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

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)

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## 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: 7/1/2012 - 6/30/2013  
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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

**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)

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**GLAZIER**  
**(New Construction, Remodeling, and Alteration)**

**Glazier**

Effective Period: 7/1/2012 - 10/31/2012

Wage Rate per Hour: \$40.00

Supplemental Benefit Rate per Hour: \$32.89

Supplemental Note: Supplemental Benefit Overtime Rate: \$40.54

Effective Period: 11/1/2012 - 6/30/2013

Wage Rate per Hour: \$40.50

Supplemental Benefit Rate per Hour: \$33.24

Supplemental Note: Supplemental Benefit Overtime Rate: \$41.24

**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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

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)

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## 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: 7/1/2012 - 4/30/2013

Wage Rate per Hour: \$23.40

Supplemental Benefit Rate per Hour: \$18.04

Effective Period: 5/1/2013 - 6/30/2013

Wage Rate per Hour: \$23.50

Supplemental Benefit Rate per Hour: \$18.54

### Overtime

Time and one half the regular rate after an 8 hour day.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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)

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**HEAT AND FROST INSULATOR**

**Heat & Frost Insulator**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$54.28

Supplemental Benefit Rate per Hour: \$31.36

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$55.98

Supplemental Benefit Rate per Hour: \$32.36

**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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

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)

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## 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: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$33.00

Supplemental Benefit Rate per Hour: \$24.15

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$33.51

Supplemental Benefit Rate per Hour: \$24.64

### 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: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$23.05

Supplemental Benefit Rate per Hour: \$17.85

Effective Period: 1/1/2013 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$23.25

Supplemental Benefit Rate per Hour: \$18.35

### 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)

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## IRON WORKER - ORNAMENTAL

### Iron Worker - Ornamental

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$41.50

Supplemental Benefit Rate per Hour: \$39.52

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$42.00

Supplemental Benefit Rate per Hour: \$42.89

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



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

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)

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## IRON WORKER - STRUCTURAL

### Iron Worker - Structural

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$45.05

Supplemental Benefit Rate per Hour: \$57.85

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$46.00

Supplemental Benefit Rate per Hour: \$61.23

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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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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)

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## 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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$38.70

Supplemental Benefit Rate per Hour: \$31.75

### 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).

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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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)

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**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: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$24.25  
Supplemental Benefit Rate per Hour: \$12.30

**Landscaper (3 - 6 years experience)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$23.25  
Supplemental Benefit Rate per Hour: \$12.30

**Landscaper (up to 3 years experience)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$20.75  
Supplemental Benefit Rate per Hour: \$12.30

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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**Groundperson**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$20.75  
Supplemental Benefit Rate per Hour: \$12.30

**Tree Remover / Pruner**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$29.25  
Supplemental Benefit Rate per Hour: \$12.30

**Landscaper Sprayer (Pesticide Applicator)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$19.25  
Supplemental Benefit Rate per Hour: \$12.30

**Watering - Plant Maintainer**

Effective Period: 7/1/2012 - 6/30/2013  
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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$49.19**

Supplemental Benefit Rate per Hour: **\$32.24**

### **Marble Finisher**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$39.05**

Supplemental Benefit Rate per Hour: **\$31.43**

### **Marble Polisher**

Effective Period: 7/1/2012 - 6/30/2013

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

(Local #7)

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## MASON TENDER

### Mason Tender

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$34.24

Supplemental Benefit Rate per Hour: \$24.40

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$34.50

Supplemental Benefit Rate per Hour: \$25.14

### 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)

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**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: 7/1/2012 - 12/31/2012

Wage Rate per Hour: **\$33.87**

Supplemental Benefit Rate per Hour: **\$19.22**

Effective Period: 1/1/2013 - 6/30/2013

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: 7/1/2012 - 12/31/2012

Wage Rate per Hour: **\$23.07**

Supplemental Benefit Rate per Hour: **\$13.53**

Effective Period: 1/1/2013 - 6/30/2013

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**

one

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

(Local #79)

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## METALLIC LATHER

### Metallic Lather

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$41.23

Supplemental Benefit Rate per Hour: \$38.35

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 (1/2) 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)

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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**MILLWRIGHT**

**Millwright**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$46.19

Supplemental Benefit Rate per Hour: \$45.67

**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)

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**MOSAIC MECHANIC**

**Mosaic Mechanic - Mosaic & Terrazzo Mechanic**

Effective Period: 7/1/2012 - 12/31/2012

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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Wage Rate per Hour: \$43.93

Supplemental Benefit Rate per Hour: \$33.08

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$44.05 per hour.

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$44.39

Supplemental Benefit Rate per Hour: \$35.12

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$46.09 per hour.

**Mosaic Mechanic - Mosaic & Terrazzo Finisher**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$42.36

Supplemental Benefit Rate per Hour: \$33.08

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$44.05 per hour.

Effective Period: 1/1/2013 - 6/30/2013

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: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$42.36

Supplemental Benefit Rate per Hour: \$33.08

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$44.05 per hour.

Effective Period: 1/1/2013 - 6/30/2013

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

**Paid Holidays**

None

(Local #7)

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**PAINTER**

**Painter - Brush & Roller**

Effective Period: 7/1/2012 - 10/31/2012

Wage Rate per Hour: **\$35.50**

Supplemental Benefit Rate per Hour: **\$25.12**

Supplemental Note: **\$29.75 on overtime**

Effective Period: 11/1/2012 - 4/30/2013

Wage Rate per Hour: **\$36.00**

Supplemental Benefit Rate per Hour: **\$25.12**

Supplemental Note: **\$29.75 on overtime**

Effective Period: 5/1/2013 - 6/30/2013

Wage Rate per Hour: **\$37.50**

Supplemental Benefit Rate per Hour: **\$25.12**

Supplemental Note: **\$29.75 on overtime**

**Spray & Scaffold / Decorative / Sandblast**

Effective Period: 7/1/2012 - 10/31/2012

Wage Rate per Hour: **\$38.50**

Supplemental Benefit Rate per Hour: **\$25.12**

Supplemental Note: **\$29.75 on overtime**

Effective Period: 11/1/2012 - 4/30/2013

Wage Rate per Hour: **\$39.00**

Supplemental Benefit Rate per Hour: **\$25.12**

Supplemental Note: **\$29.75 on overtime**

Effective Period: 5/1/2013 - 6/30/2013

Wage Rate per Hour: **\$40.50**

Supplemental Benefit Rate per Hour: **\$25.12**

Supplemental Note: **\$29.75 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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**Overtime Holidays**

Time and one half the regular rate for work on the following holiday(s).

New Year's Day  
President's Day  
Memorial Day  
Independence Day  
Labor Day  
Columbus Day  
Thanksgiving Day  
Christmas Day

**Paid Holidays**

None

(District Council of Painters #9)

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**PAINTER - SIGN**

**Designer**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$36.15

Supplemental Benefit Rate per Hour: \$9.66

**Journey person**

Effective Period: 7/1/2012 - 6/30/2013

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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)

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## PAINTER - STRIPER

### Striper (paint)

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$33.00

Supplemental Benefit Rate per Hour: \$11.52

Supplemental Note: Overtime Supplemental Benefit rate - \$7.42; New Hire Rate (0-3 months) - \$0.00

### Lineperson (thermoplastic)

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$37.00

Supplemental Benefit Rate per Hour: \$11.52

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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

## 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)

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## PAINTER - STRUCTURAL STEEL

### Painters on Structural Steel

Effective Period: 7/1/2012 - 9/30/2012

Wage Rate per Hour: \$46.25

Supplemental Benefit Rate per Hour: \$31.58

Effective Period: 10/1/2012 - 6/30/2013

Wage Rate per Hour: \$47.00

Supplemental Benefit Rate per Hour: \$32.08

### Painter - Power Tool

Effective Period: 7/1/2012 - 9/30/2012

Wage Rate per Hour: \$52.25

Supplemental Benefit Rate per Hour: \$31.58

Effective Period: 10/1/2012 - 6/30/2013

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

**Paid Holidays**

None

**Shift Rates**

Regular hourly rates plus a ten per cent (10%) differential

(Local #806)

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**PAPERHANGER**

**Paperhanger**

Effective Period: 7/1/2012 - 4/30/2013

Wage Rate per Hour: **\$37.44**

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: 5/1/2013 - 6/30/2013

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.

**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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

(District Council of Painters #9)

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## PAVER AND ROADBUILDER

### Paver & Roadbuilder - Formsetter

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$42.86**

Supplemental Benefit Rate per Hour: **\$32.15**

### Paver & Roadbuilder - Laborer

Paving and road construction work, regardless of material used, including but not limited to preparation of job sites, removal of old surfaces, asphalt and/or concrete, by whatever method, including but not limited to milling; laying of concrete; laying of asphalt for temporary, patchwork, and utility paving (but not production paving); site preparation and incidental work before the installation of rubberized materials and similar surfaces; installation and repair of temporary construction fencing; slurry seal coating, maintenance of safety surfaces; play equipment installation, and other related work.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$38.99**

Supplemental Benefit Rate per Hour: **\$32.15**

### Production Paver & Roadbuilder - Screed Person

(Production paving is asphalt paving when using a paving machine or on a project where a paving machine is traditionally used)

Adjustment of paving machinery on production paving jobs.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$45.00**

Supplemental Benefit Rate per Hour: **\$32.15**

### Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$44.49**

Supplemental Benefit Rate per Hour: **\$32.15**

### Production Paver & Roadbuilder - Shoveler

General laborer (except removal of surfaces - see Paver and Roadbuilder-Laborer) including but not limited to tamper, AC paint and liquid tar work.

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$41.20**



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$32.15

### Overtime Description

Veteran's Day is a Paid Holiday for employees working on production paving.

If an employee works New Year's Day or Christmas Day, they receive the single time rate plus 15%, except if an employee works on production paving on New Year's Day or Christmas Day, they receive the single time rate plus one day's pay for the holiday worked.

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

Columbus Day

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 fifteen percent (15%) over the single time rate, except that production paving work shall be paid at 25% over the single time rate. Hours worked over eight (8) hours during said shift shall be paid for at the time and one-half rate.

(Local #1010)

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## PLASTERER

### Plasterer

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$40.78

Supplemental Benefit Rate per Hour: \$26.80

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$40.78

Supplemental Benefit Rate per Hour: \$27.55

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**Overtime**

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

**Paid Holidays**

None

**Shift Rates**

When it is not possible to conduct alteration work during regular work hours, in a building occupied by tenants, said work shall proceed on a shift basis; however work over seven (7) hours in any twenty-four (24) hour period, the time after seven (7) hours shall be considered overtime.

The second shift shall start at a time between 3:30 p.m. and 7:00 p.m. and shall consist of seven (7) working hours and shall receive eight (8) hours of wages and benefits at the straight time rate. The workers on the second shift shall be allowed one-half (1/2) hour to eat with this time being included in the seven (7) hours of work.

(Local #530)

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**PLASTERER - TENDER**

**Plasterer - Tender**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: **\$34.24**

Supplemental Benefit Rate per Hour: **\$24.40**

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: **\$34.50**

Supplemental Benefit Rate per Hour: **\$25.14**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

**Overtime Holidays**

Double time the regular rate for work on the following holiday(s).

New Year's Day

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)

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**PLUMBER**

**Plumber**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$51.76

Supplemental Benefit Rate per Hour: \$37.19

Supplemental Note: Overtime supplemental benefit rate per hour: \$74.10

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$52.36

Supplemental Benefit Rate per Hour: \$37.34

Supplemental Note: Overtime supplemental benefit rate per hour: \$74.40

**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 million or less, and for public works jobs where the plumbing contract 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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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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)

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## PLUMBER (MECHANICAL EQUIPMENT AND SERVICE)

(Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$32.96

Supplemental Benefit Rate per Hour: \$15.93

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$33.21

Supplemental Benefit Rate per Hour: \$16.43

### Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

**Overtime Holidays**

Time and one half the regular rate for work on the following holiday(s).

New Year's Day  
President's Day  
Memorial Day  
Independence Day  
Thanksgiving Day  
Day after Thanksgiving  
Christmas Day

**Paid Holidays**

None

(Plumbers Local # 1)

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**PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME CONSTRUCTION)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$36.69

Supplemental Benefit Rate per Hour: \$25.46

Effective Period: 1/1/2013 - 6/30/2013

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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**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)

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**PLUMBER: PUMP & TANK  
(Installation and Maintenance)**

**Plumber - Pump & Tank**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$52.31**

Supplemental Benefit Rate per Hour: **\$31.56**

**Overtime**

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

**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)

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**POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING RENOVATION)**

**Pointer - Waterproofer, Caulker Mechanic**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$44.63

Supplemental Benefit Rate per Hour: \$23.10

**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)

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**ROOFER**

**Roofer**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$38.00

Supplemental Benefit Rate per Hour: \$27.07

Effective Period: 1/1/2013 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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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)

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**SANDBLASTER - STEAMBLASTER  
(Exterior Building Renovation)**

**Sandblaster / Steamblaster**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: **\$44.63**

Supplemental Benefit Rate per Hour: **\$23.10**

**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).



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

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)

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**SHEET METAL WORKER**

**Sheet Metal Worker**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$45.65

Supplemental Benefit Rate per Hour: \$40.50

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$45.65

Supplemental Benefit Rate per Hour: \$42.00

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

**Sheet Metal Worker - Duct Cleaner**

Effective Period: 7/1/2012 - 6/30/2013

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: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$36.52

Supplemental Benefit Rate per Hour: \$40.50

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$36.52

Supplemental Benefit Rate per Hour: \$42.00

### 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 journey person engaged in fan maintenance shall work in excess of forty (40) hours in any work week.

(Local #28)

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## 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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$40.09

Supplemental Benefit Rate per Hour: \$22.06

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

One

(Local #28)

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## SIGN ERECTOR

(Sheet Metal, Plastic, Electric, and Neon)

### Sign Erector

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$41.55

Supplemental Benefit Rate per Hour: \$39.32

Effective Period: 1/1/2013 - 6/30/2013

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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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)

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**STEAMFITTER**

**Steamfitter I**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: **\$50.75**  
Supplemental Benefit Rate per Hour: **\$49.68**  
Supplemental Note: Overtime supplemental benefit rate: **\$98.62**

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: **\$51.25**  
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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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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.

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**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: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$50.75

Supplemental Benefit Rate per Hour: \$49.68

Supplemental Note: Overtime supplemental benefit rate: \$98.62

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$51.25

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**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

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

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## STEAMFITTER - REFRIGERATION AND AIR CONDITIONER (Maintenance and Installation Service Person)

### Refrigeration and Air Conditioner Mechanic

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$36.30

Supplemental Benefit Rate per Hour: \$11.76

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$37.05

Supplemental Benefit Rate per Hour: \$12.26

### Refrigeration and Air Conditioner Service Person V (4th year)

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$29.82

Supplemental Benefit Rate per Hour: \$10.71

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$30.44

Supplemental Benefit Rate per Hour: \$11.13

### Refrigeration and Air Conditioner Service Person IV (3rd year)

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$24.71

Supplemental Benefit Rate per Hour: \$9.80

Effective Period: 1/1/2013 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$25.22  
Supplemental Benefit Rate per Hour: \$10.16

**Refrigeration and Air Conditioner Service Person III (2nd year)**

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$21.21  
Supplemental Benefit Rate per Hour: \$9.12

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$21.65  
Supplemental Benefit Rate per Hour: \$9.44

**Refrigeration and Air Conditioner Service Person II (2nd six months)**

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$17.60  
Supplemental Benefit Rate per Hour: \$8.50

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$17.96  
Supplemental Benefit Rate per Hour: \$8.78

**Refrigeration and Air Conditioner Service Person I (1st six months)**

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$10.95  
Supplemental Benefit Rate per Hour: \$7.90

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$11.18  
Supplemental Benefit Rate per Hour: \$8.10

**Overtime**

Time and one half the regular rate after an 8 hour day.  
Time and one half the regular rate for Saturday.  
Double time the regular rate for Sunday.

**Overtime Holidays**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

Double time the regular rate for work on the following holiday(s).

New Year's Day  
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)

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**STONE MASON - SETTER**

**Stone Mason - Setters**

Effective Period: 7/1/2012 - 6/30/2013

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



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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)

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## **TAPER**

### **Drywall Taper**

Effective Period: 7/1/2012 - 12/25/2012

Wage Rate per Hour: \$43.32

Supplemental Benefit Rate per Hour: \$21.66

Effective Period: 12/26/2012 - 6/30/2013

Wage Rate per Hour: \$43.82

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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**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)

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**TELECOMMUNICATION WORKER  
(Voice Installation Only)**

**Telecommunication Worker**

Effective Period: 7/1/2012 - 6/30/2013

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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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.)

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## TILE FINISHER

### Tile Finisher

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$38.17

Supplemental Benefit Rate per Hour: \$26.76

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$38.49

Supplemental Benefit Rate per Hour: \$27.42

### 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

One

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

### 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)

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## TILE LAYER - SETTER

### Tile Layer - Setter

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$47.75

Supplemental Benefit Rate per Hour: \$30.83

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$48.55

Supplemental Benefit Rate per Hour: \$31.46

### 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)

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

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**TIMBERPERSON**

**Timberperson**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$42.63

Supplemental Benefit Rate per Hour: \$41.99

**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 but will be paid for 9 hours, including benefits at the straight time rate for 8 hours.

(Local #1536)

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**TUNNEL WORKER**

**Blasters, Mucking Machine Operators (Compressed Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$52.00

Supplemental Benefit Rate per Hour: \$46.85

**Tunnel Workers (Compressed Air Rates)**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$50.19  
Supplemental Benefit Rate per Hour: \$45.29

**Top Nipper (Compressed Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$49.27  
Supplemental Benefit Rate per Hour: \$44.51

**Outside Lock Tender, Outside Gauge Tender, Muck Lock Tender (Compressed Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$48.37  
Supplemental Benefit Rate per Hour: \$43.67

**Bottom Bell & Top Bell Signal Person: Shaft Person (Compressed Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$48.37  
Supplemental Benefit Rate per Hour: \$43.67

**Changehouse Attendant: Powder Watchperson (Compressed Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$42.09  
Supplemental Benefit Rate per Hour: \$41.41

**Blasters (Free Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$49.62  
Supplemental Benefit Rate per Hour: \$44.75

**Tunnel Workers (Free Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$47.48  
Supplemental Benefit Rate per Hour: \$42.84

**All Others (Free Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$43.87  
Supplemental Benefit Rate per Hour: \$39.62

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 PREVAILING WAGE SCHEDULE

**Microtunneling (Free Air Rates)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$37.98

Supplemental Benefit Rate per Hour: \$34.27

**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.

**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

Constitution Day

Veteran's Day

Thanksgiving Day

Christmas Day

(Local #147)

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**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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

APPRENTICESHIP SCHEDULE OF PREVAILING WAGES AND SUPPLEMENTAL BENEFITS  
ADDENDUM  
EFFECTIVE PERIOD JANUARY 1, 2013 THROUGH JUNE 30, 2013

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List of Amended Classifications

1. Boilermaker
2. House Wrecker
3. Iron Worker - Ornamental
4. Iron Worker - Structural
5. Mason Tender
6. Plasterer
7. Plumber

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## **ASBESTOS HANDLER**

**(Ratio of Apprentice Journeyperson: 1 to 1, 1 to 3)**

### **Asbestos Handler (First 1000 Hours)**

**Effective Period: 7/1/2012 - 6/30/2013**

**Wage Rate Per Hour: 78% of Journeyperson's rate**

**Supplemental Benefit Rate Per Hour: \$14.85**

### **Asbestos Handler (Second 1000 Hours)**

**Effective Period: 7/1/2012 - 6/30/2013**

**Wage Rate Per Hour: 80% of Journeyperson's rate**

**Supplemental Benefit Rate Per Hour: \$14.85**

### **Asbestos Handler (Third 1000 Hours)**

**Effective Period: 7/1/2012 - 6/30/2013**

**Wage Rate Per Hour: 83% of Journeyperson's rate**

**Supplemental Benefit Rate Per Hour: \$14.85**

### **Asbestos Handler (Fourth 1000 Hours)**

**Effective Period: 7/1/2012 - 6/30/2013**

**Wage Rate Per Hour: 89% of Journeyperson's rate**

**Supplemental Benefit Rate Per Hour: \$14.85**

**(Local #78)**

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## **BOILERMAKER**

**(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)**

### **Boilermaker (First Year)**

**Effective Period: 7/1/2012 - 12/31/2012**

**Wage Rate Per Hour: 65% of Journeyperson's rate**

**Supplemental Benefit Rate Per Hour: \$27.41**

**Effective Period: 1/1/2013 - 3/31/2013**

**Wage Rate Per Hour: 65% of Journeyperson's rate**

**Supplemental Benefit Rate Per Hour: \$28.45**

**Effective Period: 4/1/2013 - 6/30/2013**

**Wage Rate Per Hour: 65% of Journeyperson's rate**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate Per Hour: \$28.75

**Boilermaker (Second Year: 1st Six Months)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate Per Hour: 70% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$28.91

Effective Period: 1/1/2013 - 3/31/2013

Wage Rate Per Hour: 70% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$30.03

Effective Period: 4/1/2013 - 6/30/2013

Wage Rate Per Hour: 70% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$30.33

**Boilermaker (Second Year: 2nd Six Months)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate Per Hour: 75% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$30.40

Effective Period: 1/1/2013 - 3/31/2013

Wage Rate Per Hour: 75% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$31.61

Effective Period: 4/1/2013 - 6/30/2013

Wage Rate Per Hour: 75% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$31.91

**Boilermaker (Third Year: 1st Six Months)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate Per Hour: 80% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$31.89

Effective Period: 1/1/2013 - 3/31/2013

Wage Rate Per Hour: 80% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$33.19

Effective Period: 4/1/2013 - 6/30/2013

Wage Rate Per Hour: 80% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$33.49

**Boilermaker (Third Year: 2nd Six Months)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate Per Hour: 85% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$33.38

Effective Period: 1/1/2013 - 3/31/2013

Wage Rate Per Hour: 85% of Journeyman's rate

Supplemental Benefit Rate Per Hour: \$34.76

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 4/1/2013 - 6/30/2013  
Wage Rate Per Hour: 85% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$35.06

**Boilermaker (Fourth Year: 1st Six Months)**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 90% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$34.88

Effective Period: 1/1/2013 - 3/31/2013  
Wage Rate Per Hour: 90% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$36.34

Effective Period: 4/1/2013 - 6/30/2013  
Wage Rate Per Hour: 90% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$36.64

**Boilermaker (Fourth Year: 2nd Six Months)**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 95% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$36.38

Effective Period: 1/1/2013 - 3/31/2013  
Wage Rate Per Hour: 95% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$37.90

Effective Period: 4/1/2013 - 6/30/2013  
Wage Rate Per Hour: 95% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$38.20

(Local #5)

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**BRICKLAYER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

**Bricklayer (First 750 Hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$16.60

**Bricklayer (Second 750 Hours)**

Effective Period: 7/1/2012 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Wage Rate Per Hour: 60% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$16.60

**Bricklayer (Third 750 Hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$16.60

**Bricklayer (Fourth 750 Hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$16.60

**Bricklayer (Fifth 750 Hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 90% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$16.60

**Bricklayer (Sixth 750 Hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 95% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$16.60

(Bricklayer District Council)

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**CARPENTER**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

**Carpenter (First Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 40% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$27.69

**Carpenter (Second Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyperson's rate  
Supplemental Benefit Rate Per Hour: \$27.69

**Carpenter (Third Year)**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$27.69

**Carpenter (Fourth Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$27.69

(Carpenters District Council)

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**CEMENT MASON**  
**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**

**Cement Mason (First Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 50% of Journeyman's Rate

**Cement Mason (Second Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 60% of Journeyman's Rate

**Cement Mason (Third Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 70% of Journeyman's Rate

(Local #780)

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**CEMENT AND CONCRETE WORKER**  
**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**Cement & Concrete Worker (0 - 500 hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$17.54



**Cement & Concrete Worker (501 - 1000 hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$18.37

**Cement & Concrete Worker (1001 - 2000 hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$23.75

**Cement & Concrete Worker (2001 - 4000 hours)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$24.57

(Cement Concrete Workers District Council)

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**DERRICKPERSON & RIGGER (STONE)  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)**

**Derrickperson & Rigger (stone) - First Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: 50% of Journeyman's rate

**Derrickperson & Rigger (stone) - Second Year: 1st Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: 75% of Journeyman's rate

**Derrickperson & Rigger (stone) - Second Year: 2nd Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: 75% of Journeyman's rate

**Derrickperson & Rigger (stone) - Third Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 90% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: 75% of Journeyman's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

(Local #197)

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**DOCKBUILDER/PILE DRIVER**  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)

**Dockbuilder/Pile Driver (First Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$27.69

**Dockbuilder/Pile Driver (Second Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$27.69

**Dockbuilder/Pile Driver (Third Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$27.69

**Dockbuilder/Pile Driver (Fourth Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Benefit Rate Per Hour: \$27.69

(Carpenters District Council)

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**ELECTRICIAN**  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

**Electrician (First Year - Hired before 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$14.25  
Supplemental Benefit Rate per Hour: \$11.19  
Overtime Wage Rate Per Hour: \$21.38

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
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Overtime Supplemental Rate Per Hour: \$11.96

**Electrician (First Year - Hired on or After 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$11.50

Supplemental Benefit Rate per Hour: \$9.86

Overtime Wage Rate Per Hour: \$17.25

Overtime Supplemental Rate Per Hour: \$10.48

**Electrician (Second Year - Hired before 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$17.05

Supplemental Benefit Rate per Hour: \$12.54

Overtime Wage Rate Per Hour: \$25.58

Overtime Supplemental Rate Per Hour: \$13.47

**Electrician (Second Year - Hired on or After 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$13.50

Supplemental Benefit Rate per Hour: \$10.83

Overtime Wage Rate Per Hour: \$20.25

Overtime Supplemental Rate Per Hour: \$11.56

**Electrician (Third Year - Hired before 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$19.15

Supplemental Benefit Rate per Hour: \$13.56

Overtime Wage Rate Per Hour: \$28.73

Overtime Supplemental Rate Per Hour: \$14.60

**Electrician (Third Year - Hired on or After 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$15.50

Supplemental Benefit Rate per Hour: \$11.79

Overtime Wage Rate Per Hour: \$23.25

Overtime Supplemental Rate Per Hour: \$12.63

**Electrician (Fourth Year - Hired before 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$21.10

Supplemental Benefit Rate per Hour: \$14.50

Overtime Wage Rate Per Hour: \$31.65

Overtime Supplemental Rate Per Hour: \$15.65

**Electrician (Fourth Year - Hired on or After 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$17.50  
Supplemental Benefit Rate per Hour: \$12.76  
Overtime Wage Rate Per Hour: \$26.25  
Overtime Supplemental Rate Per Hour: \$13.71

**Electrician (Fifth Year - Hired before 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$25.30  
Supplemental Benefit Rate per Hour: \$17.52  
Overtime Wage Rate Per Hour: \$37.95  
Overtime Supplemental Rate Per Hour: \$18.85

**Electrician (Fifth Year - Hired on or After 5/10/07)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$21.50  
Supplemental Benefit Rate per Hour: \$15.71  
Overtime Wage Rate Per Hour: \$32.25  
Overtime Supplemental Rate Per Hour: \$16.84

**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)

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**ELEVATOR CONSTRUCTOR**  
**(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)**

**Elevator (Constructor) - First Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyperson's rate  
Supplemental Rate Per Hour: \$25.40  
Effective 3/17/2013 - Supplemental Rate Per Hour: \$26.87

**Elevator (Constructor) - Second Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 55% of Journeyperson's rate  
Supplemental Rate Per Hour: \$26.43  
Effective 3/17/2013 - Supplemental Rate Per Hour: \$27.92

**Elevator (Constructor) - Third Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Rate Per Hour: \$27.84  
Effective 3/17/2013 - Supplemental Rate Per Hour: \$29.38

**Elevator (Constructor) - Fourth Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 75% of Journeyman's rate  
Supplemental Rate Per Hour: \$29.25  
Effective 3/17/2013 - Supplemental Benefit Per Hour: \$30.84

(Local #1)

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**ELEVATOR REPAIR & MAINTENANCE  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)**

**Elevator Service/Modernization Mechanic (First Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Benefit Per Hour: \$25.33  
Effective 3/17/2013 - Supplemental Benefit Per Hour: \$26.79

**Elevator Service/Modernization Mechanic (Second Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Benefit Per Hour: \$25.65  
Effective 3/17/2013 - Supplemental Benefit Per Hour: \$27.12

**Elevator Service/Modernization Mechanic (Third Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Benefit Per Hour: \$26.92  
Effective 3/17/2013 - Supplemental Benefit Per Hour: \$28.43

**Elevator Service/Modernization Mechanic (Fourth Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 75% of Journeyman's rate  
Supplemental Benefit Per Hour: \$28.19

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Effective 3/17/2013 - Supplemental Benefit Per Hour: \$29.74

(Local #1)

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**ENGINEER**  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 5)

**Engineer - First Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$21.64  
Supplemental Benefit Rate per Hour: \$20.07

**Engineer - Second Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$27.05  
Supplemental Benefit Rate per Hour: \$20.07

**Engineer - Third Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$29.75  
Supplemental Benefit Rate per Hour: \$20.07

**Engineer - Fourth Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$32.45  
Supplemental Benefit Rate per Hour: \$20.07

(Local #15)

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**ENGINEER - OPERATING**  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 5)

**Operating Engineer - First Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour 40% of Journeyman's Rate

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Supplemental Benefit Per Hour: \$18.65

**Operating Engineer - Second Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's Rate  
Supplemental Benefit Per Hour: \$18.65

**Operating Engineer - Third Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 60% of Journeyman's Rate  
Supplemental Benefit Per Hour: \$18.65

(Local #14)

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**FLOOR COVERER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

**Floor Coverer (First Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Rate Per Hour: \$25.75

**Floor Coverer (Second Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$25.75

**Floor Coverer (Third Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Rate Per Hour: \$25.75

**Floor Coverer (Fourth Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Rate Per Hour: \$25.75

(Carpenters District Council)

**GLAZIER**  
**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**Glazier (First Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Rate Per Hour: \$11.97

**Glazier (Second Year)**

Effective Period: 7/1/2012 - 10/31/2012  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$21.01

Effective Period: 11/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$21.13

**Glazier (Third Year)**

Effective Period: 7/1/2012 - 10/31/2012  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$23.38

Effective Period: 11/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$23.54

**Glazier (Fourth Year)**

Effective Period: 7/1/2012 - 10/31/2012  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Rate Per Hour: \$28.14

Effective Period: 11/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$28.34

(Local #1281)

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**HEAT & FROST INSULATOR**  
**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

**Heat & Frost Insulator (First Year)**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate

**Heat & Frost Insulator (Second Year)**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

**Heat & Frost Insulator (Third Year)**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 70% of Journeyman's rate

**Heat & Frost Insulator (Fourth Year)**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #12)

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**HOUSE WRECKER**

**(TOTAL DEMOLITION)**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**House Wrecker - First Year**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$20.06

Supplemental Benefit Rate per Hour: \$15.45

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$20.21

Supplemental Benefit Rate per Hour: \$15.80

**House Wrecker - Second Year**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$21.06

Supplemental Benefit Rate per Hour: \$15.45

Effective Period: 1/1/2013 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$21.26  
Supplemental Benefit Rate per Hour: \$15.80

**House Wrecker - Third Year**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$22.56  
Supplemental Benefit Rate per Hour: \$15.45

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$22.81  
Supplemental Benefit Rate per Hour: \$15.80

**House Wrecker - Fourth Year**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$25.06  
Supplemental Benefit Rate per Hour: \$15.45

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$25.36  
Supplemental Benefit Rate per Hour: \$15.80

(Local #79)

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**IRON WORKER - ORNAMENTAL**  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

**Iron Worker (Ornamental) - 1st Four Months - Hired on or Before 8/1/08**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$32.06

**Iron Worker (Ornamental) 5 - 10 Months - Hired on or Before 8/1/08**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Rate Per Hour: \$32.89

**Iron Worker (Ornamental) 11 - 16 Months - Hired on or Before 8/1/08**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Rate Per Hour: \$33.73

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Rate Per Hour: \$34.34

**Iron Worker (Ornamental) 17 - 22 Months - Hired on or Before 8/1/08**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyperson's rate  
Supplemental Rate Per Hour: \$35.39

**Iron Worker (Ornamental) 23 - 28 Months - Hired on or Before 8/1/08**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 85% of Journeyperson's rate  
Supplemental Rate Per Hour: \$36.22

**Iron Worker (Ornamental) 29 - 36 Months - Hired on or Before 8/1/08**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 95% of Journeyperson's rate  
Supplemental Rate Per Hour: \$37.89

**Iron Worker (Ornamental) - 1st Ten Months - Hired After 8/1/08**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 50% of Journeyperson's rate  
Supplemental Rate Per Hour: \$30.40

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyperson's rate  
Supplemental Rate Per Hour: \$33.39

**Iron Worker (Ornamental) - 11 - 16 Months - Hired After 8/1/08**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 55% of Journeyperson's rate  
Supplemental Rate Per Hour: \$31.23

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 55% of Journeyperson's rate  
Supplemental Rate Per Hour: \$34.34

**Iron Worker (Ornamental) - 17 - 22 Months - Hired After 8/1/08**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 60% of Journeyperson's rate  
Supplemental Rate Per Hour: \$32.06

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 60% of Journeyperson's rate  
Supplemental Rate Per Hour: \$35.29

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

**Iron Worker (Ornamental) - 23 - 28 Months - Hired After 8/1/08**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Rate Per Hour: \$33.73

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Rate Per Hour: \$37.19

**Iron Worker (Ornamental) - 29 - 36 Months - Hired After 8/1/08**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 80% of Journeyperson's rate  
Supplemental Rate Per Hour: \$35.39

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyperson's rate  
Supplemental Rate Per Hour: \$39.09

(Local #580)

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**IRON WORKER - STRUCTURAL  
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)**

**Iron Worker (Structural) - 1st Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$23.62  
Supplemental Benefit Rate per Hour: \$41.21

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$24.10  
Supplemental Benefit Rate per Hour: \$43.12

**Iron Worker (Structural) - 7- 18 Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$24.22  
Supplemental Benefit Rate per Hour: \$41.21

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$24.70  
Supplemental Benefit Rate per Hour: \$43.12

**Iron Worker (Structural) - 19 - 36 months**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$24.82

Supplemental Benefit Rate per Hour: \$41.21

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$25.30

Supplemental Benefit Rate per Hour: \$43.12

(Local #40 and #361)

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**LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE LAYER & COMMON)**

(Ratio Apprentice to Journeyman: 1 to 1, 1 to 3)

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - First 1000 hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 50% of Journeyman's rate

Supplemental Rate Per Hour: \$31.75

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Second 1000 hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 60% of Journeyman's rate

Supplemental Rate Per Hour: \$31.75

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Third 1000 hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 75% of Journeyman's rate

Supplemental Rate Per Hour: \$31.75

**Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Fourth 1000 hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 90% of Journeyman's rate

Supplemental Rate Per Hour: \$31.75

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

(Local #731)

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**MARBLE MECHANICS**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**

**Cutters & Setters - First 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

**Cutters & Setters - Second 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 55% of Journeyman's rate

**Cutters & Setters - Third 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 65% of Journeyman's rate

**Cutters & Setters - Fourth 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 75% of Journeyman's rate

**Cutters & Setters - Fifth 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 85% of Journeyman's rate

**Cutters & Setters - Sixth 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 95% of Journeyman's rate

**Polishers & Finishers - First 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

**Polishers & Finishers - Second 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

**Polishers & Finishers - Third 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

**Polishers & Finishers - Fourth 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 90% of Journeyperson's rate

(Local #7)

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**MASON TENDER**  
**(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)**

**Mason Tender - First Year**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$20.33  
Supplemental Benefit Rate per Hour: \$16.16

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$20.48  
Supplemental Benefit Rate per Hour: \$16.51

**Mason Tender - Second Year**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$21.33  
Supplemental Benefit Rate per Hour: \$16.16

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$21.53  
Supplemental Benefit Rate per Hour: \$16.51

**Mason Tender - Third Year**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$22.83

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$16.16

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$23.08

Supplemental Benefit Rate per Hour: \$16.51

**Mason Tender - Fourth Year**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$25.33

Supplemental Benefit Rate per Hour: \$16.16

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$25.63

Supplemental Benefit Rate per Hour: \$16.51

(Local #79)

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**METALLIC LATHER**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

**Metallic Lather (First Year -Called Prior to 6/29/11)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$27.91

Supplemental Benefit Rate per Hour: \$22.79

**Metallic Lather (Second Year - Called Prior to 6/29/11)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$32.51

Supplemental Benefit Rate per Hour: \$24.44

**Metallic Lather (Third Year - Called Prior to 6/29/11)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$37.57

Supplemental Benefit Rate per Hour: \$25.59

**Metallic Lather (First Year -Called On Or After 6/29/11)**

Effective Period: 7/1/2012 - 6/30/2013

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: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$22.71  
Supplemental Benefit Rate per Hour: \$19.85

**Metallic Lather (Third Year - Called On Or After 6/29/11)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$27.71  
Supplemental Benefit Rate per Hour: \$19.85

(Local #46)

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**MILLWRIGHT**

**(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)**

**Millwright (First Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$25.40  
Supplemental Benefit Rate per Hour: \$28.67

**Millwright (Second Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$30.02  
Supplemental Benefit Rate per Hour: \$31.87

**Millwright (Third Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$34.64  
Supplemental Benefit Rate per Hour: \$36.19

**Millwright (Fourth Year)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$43.88  
Supplemental Benefit Rate per Hour: \$41.50

(Local #740)

**PAVER AND ROADBUILDER**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**Paver and Roadbuilder - First Year (Minimum 1000 hours)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$25.72

Supplemental Benefit Rate per Hour: \$15.75

**Paver and Roadbuilder - Second Year (Minimum 1000 hours)**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$27.29

Supplemental Benefit Rate per Hour: \$15.75

(Local #1010)

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**PAINTER**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**Painter - Brush & Roller - First Year**

Effective Period: 7/1/2012 - 10/31/2012

Wage Rate per Hour: \$14.20

Supplemental Benefit Rate per Hour: \$10.88

Effective Period: 11/1/2012 - 6/30/2013

Wage Rate per Hour: \$14.40

Supplemental Benefit Rate per Hour: \$10.88

**Painter - Brush & Roller - Second Year**

Effective Period: 7/1/2012 - 10/31/2012

Wage Rate per Hour: \$17.75

Supplemental Benefit Rate per Hour: \$14.73

Effective Period: 11/1/2012 - 6/30/2013

Wage Rate per Hour: \$18.00

Supplemental Benefit Rate per Hour: \$14.73

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

**Painter - Brush & Roller - Third Year**

Effective Period: 7/1/2012 - 10/31/2012

Wage Rate per Hour: \$21.30

Supplemental Benefit Rate per Hour: \$17.64

Effective Period: 11/1/2012 - 6/30/2013

Wage Rate per Hour: \$21.60

Supplemental Benefit Rate per Hour: \$17.64

**Painter - Brush & Roller - Fourth Year**

Effective Period: 7/1/2012 - 10/31/2012

Wage Rate per Hour: \$28.40

Supplemental Benefit Rate per Hour: \$23.02

Effective Period: 11/1/2012 - 6/30/2013

Wage Rate per Hour: \$28.80

Supplemental Benefit Rate per Hour: \$23.02

(District Council of Painters)

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**PAINTER - STRUCTURAL STEEL**  
**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**Painters - Structural Steel (First Year)**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate

**Painters - Structural Steel (Second Year)**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

**Painters - Structural Steel (Third Year)**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #806)

**PLASTERER**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**Plasterer - First Year: 1st Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Rate Per Hour: \$14.61

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Rate Per Hour: \$15.36

**Plasterer - First Year: 2nd Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 45% of Journeyman's rate  
Supplemental Rate Per Hour: \$15.09

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 45% of Journeyman's rate  
Supplemental Rate Per Hour: \$15.84

**Plasterer - Second Year: 1st Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Rate Per Hour: \$17.06

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Rate Per Hour: \$17.81

**Plasterer - Second Year: 2nd Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$18.14

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$18.89

**Plasterer - Third Year: 1st Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Rate Per Hour: \$20.31

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 70% of Journeyperson's rate  
Supplemental Rate Per Hour: \$21.06

**Plasterer - Third Year: 2nd Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate Per Hour: 75% of Journeyperson's rate  
Supplemental Rate Per Hour: \$21.39

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate Per Hour: 75% of Journeyperson's rate  
Supplemental Rate Per Hour: \$22.14

(Local #530)

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**PLUMBER**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

**Plumber - First Year: 1st Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$14.00  
Supplemental Benefit Rate per Hour: \$0.71

**Plumber - First Year: 2nd Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$14.00  
Supplemental Benefit Rate per Hour: \$2.96

**Plumber - Second Year**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$17.96  
Supplemental Benefit Rate per Hour: \$16.25

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$18.26  
Supplemental Benefit Rate per Hour: \$16.32

**Plumber - Third Year**

Effective Period: 7/1/2012 - 12/31/2012

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$20.06**  
Supplemental Benefit Rate per Hour: **\$16.25**

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: **\$20.36**  
Supplemental Benefit Rate per Hour: **\$16.32**

**Plumber - Fourth Year**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: **\$22.91**  
Supplemental Benefit Rate per Hour: **\$16.25**

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: **\$23.21**  
Supplemental Benefit Rate per Hour: **\$16.32**

**Plumber - Fifth Year: 1st Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: **\$24.31**  
Supplemental Benefit Rate per Hour: **\$16.25**

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: **\$24.61**  
Supplemental Benefit Rate per Hour: **\$16.32**

**Plumber - Fifth Year: 2nd Six Months**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: **\$36.38**  
Supplemental Benefit Rate per Hour: **\$16.25**

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: **\$36.68**  
Supplemental Benefit Rate per Hour: **\$16.32**

(Plumbers Local #1)

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**POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING  
RENOVATION)**  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

**Pointer - Waterproofer, Caulker Mechanic - First Year**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$25.00

Supplemental Benefit Rate per Hour: \$3.45

**Pointer - Waterproofer, Caulker Mechanic - Second Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$27.25

Supplemental Benefit Rate per Hour: \$8.40

**Pointer - Waterproofer, Caulker Mechanic - Third Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$32.23

Supplemental Benefit Rate per Hour: \$11.15

**Pointer - Waterproofer, Caulker Mechanic - Fourth Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$38.66

Supplemental Benefit Rate per Hour: \$11.15

(Bricklayer District Council)

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**ROOFER**

**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)**

**Roofer - First Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 35% of Journeyman's Rate

**Roofer - Second Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 50% of Journeyman's Rate

**Roofer - Third Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 60% of Journeyman's Rate

**Roofer - Fourth Year**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's Rate

(Local #8)

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**SHEET METAL WORKER**  
**(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)**

**Sheet Metal Worker - First Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 30% of Journeyperson's rate  
Supplemental Rate Per Hour: \$15.37

**Sheet Metal Worker - Second Year**

Effective Period: 7/1/2012 - 6/30/2013  
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: 7/1/2012 - 6/30/2013  
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: 7/1/2012 - 6/30/2013  
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: 7/1/2012 - 6/30/2013  
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: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 55% of Journeyperson's rate  
Supplemental Rate Per Hour: \$25.33

**Sheet Metal Worker - Fifth Year (1st Six Months)**



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$27.47

**Sheet Metal Worker - Fifth Year(2nd Six Months)**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Rate Per Hour: \$31.23

(Local #28)

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**SIGN ERECTOR**  
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

**Sign Erector - First Year: 1st Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 35% of Journeyman's rate  
Supplemental Rate Per Hour: \$5.96

**Sign Erector - First Year: 2nd Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 40% of Journeyman's rate  
Supplemental Rate Per Hour: \$6.75

**Sign Erector - Second Year: 1st Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 45% of Journeyman's rate  
Supplemental Rate Per Hour: \$7.55

**Sign Erector - Second Year: 2nd Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 50% of Journeyman's rate  
Supplemental Rate Per Hour: \$8.34

**Sign Erector - Third Year: 1st Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 55% of Journeyman's rate  
Supplemental Rate Per Hour: \$9.13

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

**Sign Erector - Third Year: 2nd Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 60% of Journeyman's rate  
Supplemental Rate Per Hour: \$9.92

**Sign Erector - Fourth Year: 1st Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 65% of Journeyman's rate  
Supplemental Rate Per Hour: \$10.72

**Sign Erector - Fourth Year: 2nd Six Months**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 70% of Journeyman's rate  
Supplemental Rate Per Hour: \$11.51

**Sign Erector - Fifth Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 75% of Journeyman's rate  
Supplemental Rate Per Hour: \$12.30

**Sign Erector - Sixth Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 80% of Journeyman's rate  
Supplemental Rate Per Hour: \$12.30

(Local #137)

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**STEAMFITTER**  
**(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

**Steamfitter - First Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate and Supplemental Per Hour: 40% of Journeyman's rate

**Steamfitter - Second Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate and Supplemental Rate Per Hour: 50% of Journeyman's rate.

**Steamfitter - Third Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate and Supplemental Rate per Hour: 65% of Journeyman's rate.

**Steamfitter - Fourth Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate and Supplemental Rate Per Hour: 80% of Journeyman's rate.

**Steamfitter - Fifth Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate and Supplemental Rate Per Hour: 85% of Journeyman's rate.

(Local #638)

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**STONE MASON - SETTER**

(Ratio Apprentice of Journeyman: 1 to 1, 1 to 2)

**Stone Mason - Setters - First 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

**Stone Mason - Setters - Second 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 60% of Journeyman's rate

Supplemental Rate Per Hour: 50% of Journeyman's rate

**Stone Mason - Setters - Third 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 70% of Journeyman's rate

Supplemental Rate Per Hour: 50% of Journeyman's rate

**Stone Mason - Setters - Fourth 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 80% of Journeyman's rate

Supplemental Rate Per Hour: 50% of Journeyman's rate

**Stone Mason - Setters - Fifth 750 Hours**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013  
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: 7/1/2012 - 6/30/2013  
Wage Rate Per Hour: 100% of Journeyperson's rate  
Supplemental Rate Per Hour: 50% of Journeyperson's rate

(Bricklayers District Council)

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**TAPER**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

**Drywall Taper - First Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

**Drywall Taper - Second Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

**Drywall Taper - Third Year**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #1974)

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**TILE LAYER - SETTER**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

**Tile Layer - Setter - First 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013  
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

**Tile Layer - Setter - Second 750 Hours**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 55% of Journeyman's rate

**Tile Layer - Setter - Third 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 65% of Journeyman's rate

**Tile Layer - Setter - Fourth 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 75% of Journeyman's rate

**Tile Layer - Setter - Fifth 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 85% of Journeyman's rate

**Tile Layer - Setter - Sixth 750 Hours**

Effective Period: 7/1/2012 - 6/30/2013

Wage and Supplemental Rate Per Hour: 95% of Journeyman's rate

Local #7)

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**TIMBERPERSON**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)

**Timberperson - First Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 40% of Journeyman's rate

Supplemental Rate Per Hour: \$27.49

**Timberperson - Second Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 50% of Journeyman's rate

Supplemental Rate Per Hour: \$27.49

**Timberperson - Third Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 65% of Journeyman's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Rate Per Hour: \$27.49

**Timberperson - Fourth Year**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$27.49

(Local #1536)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

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LABOR LAW § 230 AND NYC ADMINISTRATIVE CODE § 6-130  
BUILDING SERVICE EMPLOYEES

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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.

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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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

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](http://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](http://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.



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE



Office of the Comptroller  
BUREAU OF LABOR LAW

CITY OF NEW YORK  
OFFICE OF THE COMPTROLLER  
JOHN C. LIU

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](http://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](http://WWW.COMPTROLLER.NYC.GOV) (oprime "Oficina de Derecho Laboral").

Wasył Kinach, P.E.  
Director of Classifications  
Bureau of Labor Law

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

§230 SCHEDULE OF PREVAILING WAGES AND SUPPLEMENTAL BENEFITS ADDENDUM  
EFFECTIVE PERIOD JANUARY 1, 2013 THROUGH JUNE 30, 2013

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List of Amended Changes

1. MODIFIED PREAMBLE TO INCORPORATE PROVISIONS OF NYC  
ADMINISTRATIVE CODE §6-130

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$230 PREVAILING WAGE SCHEDULE

**BOILER SERVICE PERSON/TANK CLEANER MECHANIC (LOW PRESSURE)**

**Boiler Service Person/Tank Cleaner Mechanic (Low Pressure)**

Effective Period: 7/1/2012 - 6/30/2013

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)

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**BUILDING CLEANER AND MAINTAINER (OFFICE)**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

**Office Building Class "A" Handyperson (Over 280,000 square feet gross area)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$24.77

Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$25.10

Supplemental Benefit Rate per Hour: \$9.51

**Office Building Class "A" Foreperson, Starter (Over 280,000 square feet gross area)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$24.66

Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$24.99

Supplemental Benefit Rate per Hour: \$9.51

**Office Building Class "A" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Over 280,000 square feet gross area)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$22.65

Supplemental Benefit Rate per Hour: \$9.13

Supplemental Note: for new employee 0-12 months of employment - \$6.64; for new employee 13-24 months of employment - \$8.81

Effective Period: 1/1/2013 - 6/30/2013

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.**

**Office Building Class "B" Handyperson (Over 120,000 and less than 280,000 square feet gross area)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$24.74

Supplemental Benefit Rate per Hour: \$9.13

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$25.07  
Supplemental Benefit Rate per Hour: \$9.51

**Office Building Class "B" Foreperson, Starter (Over 120,000 and less than 280,000 square feet gross area)**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$24.63  
Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$24.95  
Supplemental Benefit Rate per Hour: \$9.51

**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: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$22.62  
Supplemental Benefit Rate per Hour: \$9.13  
Supplemental Note: for new employee 0-12 months of employment - \$6.64; for new employee 13-24 months of employment - \$8.81

Effective Period: 1/1/2013 - 6/30/2013  
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.

**Office Building Class "C" Handyperson (Less than 120,000 square feet gross area)**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$24.70  
Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$25.02  
Supplemental Benefit Rate per Hour: \$9.51

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

**Office Building Class "C" Foreperson, Starter (Less than 120,000 square feet gross area)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$24.59

Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$24.91

Supplemental Benefit Rate per Hour: \$9.51

**Office Building Class "C" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Less than 120,000 square feet gross area)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$22.57

Supplemental Benefit Rate per Hour: \$9.13

Supplemental Note: for new employee 0-12 months of employment - \$6.64; for new employee 13-24 months of employment - \$8.81

Effective Period: 1/1/2013 - 6/30/2013

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.

**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**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$230 PREVAILING WAGE SCHEDULE

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)

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**BUILDING CLEANER AND MAINTAINER (RESIDENTIAL)**

**Residential Building Class "A" Handyman**

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: 7/1/2012 – 4/20/2013

Wage Rate per Hour: **\$22.94**

Supplemental Benefit Rate per Hour: **\$8.68**

Supplemental Note: Effective 1/1/2013 - \$9.43

Effective Period: 4/21/2013 - 6/30/2013

Wage Rate per Hour: **\$23.57**

Supplemental Benefit Rate per Hour: **\$9.43**

**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: 7/1/2012 - 4/20/2013

Wage Rate per Hour: **\$20.77**

Supplemental Benefit Rate per Hour: **\$8.68**

Supplemental Note: for new employee 0-12 months of employment - \$6.37; for new employee 13-24 months of employment - \$8.43

Effective 1/1/2013 - \$9.43; for new employee 0-12 months of employment - \$6.92; for new employee 13-24 months of employment - \$9.18

Effective Period: 4/21/2013 - 6/30/2013



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

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.

**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: 7/1/2012 - 4/20/2013

Wage Rate per Hour: \$22.88

Supplemental Benefit Rate per Hour: \$8.68

Supplemental Note: Effective 1/1/2013 - \$9.43

Effective Period: 4/21/2013 - 6/30/2013

Wage Rate per Hour: \$23.51

Supplemental Benefit Rate per Hour: \$9.43

**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: 7/1/2012 - 4/20/2013

Wage Rate per Hour: \$20.71

Supplemental Benefit Rate per Hour: \$8.68

Supplemental Note: for new employee 0-12 months of employment - \$6.37; for new employee 13-24 months of employment - \$8.43

Effective 1/1/2013 - \$9.43; for new employee 0-12 months of employment - \$6.92; for new employee 13-24 months of employment - \$9.18

Effective Period: 4/21/2013 - 6/30/2013

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.

**Residential Building Class "C" Handyperson**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

**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: 7/1/2012 - 4/20/2013**

**Wage Rate per Hour: \$22.83**

**Supplemental Benefit Rate per Hour: \$8.68**

**Supplemental Note: Effective 1/1/2013 - \$9.43**

**Effective Period: 4/21/2013 - 6/30/2013**

**Wage Rate per Hour: \$23.45**

**Supplemental Benefit Rate per Hour: \$9.43**

**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: 7/1/2012 - 4/20/2013**

**Wage Rate per Hour: \$20.65**

**Supplemental Benefit Rate per Hour: \$8.68**

**Supplemental Note: for new employee 0-12 months of employment - \$6.37; for new employee 13-24 months of employment - \$8.43**

**Effective 1/1/2013 - \$9.43; for new employee 0-12 months of employment - \$6.92; for new employee 13-24 months of employment - \$9.18**

**Effective Period: 4/21/2013 - 6/30/2013**

**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.**

**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

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

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)

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**BUILDING HVAC SERVICES OPERATOR**

**Engineer (Refrigeration)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$34.15

Supplemental Benefit Rate per Hour: \$15.44

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$35.18

Supplemental Benefit Rate per Hour: \$15.78

**Fireperson**

Fireperson (Helper): Assists the Engineer

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$26.59

Supplemental Benefit Rate per Hour: \$15.09

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$27.39

Supplemental Benefit Rate per Hour: \$15.41

**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.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

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)

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**CLEANER (PARKING GARAGE)**

**Garage Cleaner**

Effective Period: 7/1/2012 - 6/30/2013  
Wage Rate per Hour: \$10.00  
Supplemental Benefit Rate per Hour: \$1.50

**Overtime**

Time and one half the regular rate after an 8 hour day or after 40 hours in any work week.

(NYC Administrative Code §6-109)

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**FUEL OIL**

**Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (5th Year and above)**

Effective Period: 7/1/2012 - 12/15/2012  
Wage Rate per Hour: \$30.11  
Supplemental Benefit Rate per Hour: \$18.80

Effective Period: 12/16/2012 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: **\$30.61**  
Supplemental Benefit Rate per Hour: **\$19.80**  
Supplemental Note: Effective 1/1/2013 - \$20.42

**Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (4th Year)**

Effective Period: 7/1/2012 - 12/15/2012  
Wage Rate per Hour: **\$27.50**  
Supplemental Benefit Rate per Hour: **\$18.80**

Effective Period: 12/16/2012 - 6/30/2013  
Wage Rate per Hour: **\$28.00**  
Supplemental Benefit Rate per Hour: **\$19.80**  
Supplemental Note: Effective 1/1/2013 - \$20.42

**Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (3rd Year)**

Effective Period: 7/1/2012 - 12/15/2012  
Wage Rate per Hour: **\$25.50**  
Supplemental Benefit Rate per Hour: **\$18.80**

Effective Period: 12/16/2012 - 6/30/2013  
Wage Rate per Hour: **\$26.00**  
Supplemental Benefit Rate per Hour: **\$19.80**  
Supplemental Note: Effective 1/1/2013 - \$20.42

**Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (2nd Year)**

Effective Period: 7/1/2012 - 12/15/2012  
Wage Rate per Hour: **\$23.50**  
Supplemental Benefit Rate per Hour: **\$18.80**

Effective Period: 12/16/2012 - 6/30/2013  
Wage Rate per Hour: **\$24.00**  
Supplemental Benefit Rate per Hour: **\$19.80**  
Supplemental Note: Effective 1/1/2013 - \$20.42

**Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (1st Year)**

Effective Period: 7/1/2012 - 12/15/2012  
Wage Rate per Hour: **\$21.50**  
Supplemental Benefit Rate per Hour: **\$18.80**

Effective Period: 12/16/2012 - 6/30/2013  
Wage Rate per Hour: **\$22.00**  
Supplemental Benefit Rate per Hour: **\$19.80**  
Supplemental Note: Effective 1/1/2013 - \$20.42

**Overtime**

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

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).

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**GARDENER**

**Gardener**

Effective Period: 7/1/2012 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$17.04

Supplemental Benefit Rate per Hour: \$1.72

**Overtime**

Time and one half the regular rate after an 8 hour day or 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)

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**LOCKSMITH**

Locksmith

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$21.46

Supplemental Benefit Rate per Hour: \$5.89

**Overtime**

Time and one half the regular rate after an 8 hour day or 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)

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**MEDICAL WASTE REMOVAL**

Driver

Effective Period: 7/1/2012 - 3/31/2013

Wage Rate per Hour: \$17.75

Supplemental Benefit Rate per Hour: \$8.79

Effective Period: 4/1/2013 - 6/30/2013

Wage Rate per Hour: \$18.00

Supplemental Benefit Rate per Hour: \$9.34

Helper

Effective Period: 7/1/2012 - 3/31/2013

Wage Rate per Hour: \$14.00

Supplemental Benefit Rate per Hour: \$8.79

Effective Period: 4/1/2013 - 6/30/2013

Wage Rate per Hour: \$14.25

Supplemental Benefit Rate per Hour: \$9.34

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$230 PREVAILING WAGE SCHEDULE

**Tractor Trailer Driver**

Effective Period: 7/1/2012 - 3/31/2013

Wage Rate per Hour: \$20.25

Supplemental Benefit Rate per Hour: \$8.79

Effective Period: 4/1/2013 - 6/30/2013

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**

Presidents' Day  
Memorial Day  
Independence Day  
Labor Day  
Thanksgiving Day  
Christmas Day

**Vacation**

1 year of service but less than five years.....10 days  
5 years of service but less than ten years.....15 days  
10 years of service.....16 days  
11 years.....17 days  
12 years.....18 days  
13 years.....19 days  
14 years.....20 days  
20 years.....21 days  
21 years.....22 days  
22 years.....23 days  
23 years.....24 days  
24 years.....25 days  
Plus 5 Personal Days

(Local #813)

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**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: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$23.11



OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$230 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$4.10

**Light Truck Driver**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$18.08

Supplemental Benefit Rate per Hour: \$4.10

**Laborer and Freight, Stock, and Material Movers, Hand**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$17.68

Supplemental Benefit Rate per Hour: \$4.10

**Overtime**

Time and one half the regular rate after an 8 hour day or 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)

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**REFUSE REMOVER**

**Refuse Remover**

Effective Period: 7/1/2012 - 6/30/2013

Wage Rate per Hour: \$27.62

Supplemental Benefit Rate per Hour: \$4.10

**Overtime**

Time and one half the regular rate after an 8 hour day or 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)

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**SECURITY GUARD (ARMED)**

**Security Guard (Armed)**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$27.75

Supplemental Benefit Rate per Hour: \$4.73

Supplemental Note: for new employee 0-30 days of employment - \$4.09; for new employee 31-120 days of employment - \$4.26; for new employee 121 days - 2 years of employment - \$4.37

Effective Period: 1/1/2013 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

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

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

### 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)

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## SECURITY GUARD (UNARMED)

### Security Guard (Unarmed) 0 - 6 months

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: **\$12.60**

Supplemental Benefit Rate per Hour: **\$4.37**

Supplemental Note: for new employee 0-30 days of employment - \$4.09; for new employee 31-120 days of employment - \$4.26

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

Effective Period: 1/1/2013 - 6/30/2013

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

**Security Guard (Unarmed) 7 - 12 months**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$13.10

Supplemental Benefit Rate per Hour: \$4.37

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$13.35

Supplemental Benefit Rate per Hour: \$4.54

**Security Guard (Unarmed) 13 - 18 months**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$13.60

Supplemental Benefit Rate per Hour: \$4.37

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$13.85

Supplemental Benefit Rate per Hour: \$4.54

**Security Guard (Unarmed) 19 - 24 months**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$14.10

Supplemental Benefit Rate per Hour: \$4.37

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$14.35

Supplemental Benefit Rate per Hour: \$4.54

**Security Guard (Unarmed) 25 - 30 months**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$14.60

Supplemental Benefit Rate per Hour: \$4.73

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$14.85

Supplemental Benefit Rate per Hour: \$4.90

**Security Guard (Unarmed) 31 months or more**

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$14.75

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: **\$4.73**

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: **\$15.15**

Supplemental Benefit Rate per Hour: **\$4.90**

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

### Overtime Description

A guard who works a holiday is paid the regular rate plus receives the paid holiday.

Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

### Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular hourly rate after 40 hours in any work week.

### Paid Holidays

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

### 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)

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## WINDOW CLEANER

### Window Cleaner

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: **\$26.12**

Supplemental Benefit Rate per Hour: **\$9.13**

Effective Period: 1/1/2013 - 6/30/2013

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$26.44  
Supplemental Benefit Rate per Hour: \$9.51

**Power Operated Scaffolds, Manual Scaffolds, and Boatswain Chairs**

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$28.37  
Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$28.69  
Supplemental Benefit Rate per Hour: \$9.51

**Window Cleaner Apprentice (0 - 3 months)**

Employee must be a registered apprentice with the New York State Department of Labor

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$19.35  
Supplemental Benefit Rate per Hour: \$0.00

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$19.59  
Supplemental Benefit Rate per Hour: \$0.00

**Window Cleaner Apprentice (4 - 7 months)**

Employee must be a registered apprentice with the New York State Department of Labor

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$20.92  
Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$21.18  
Supplemental Benefit Rate per Hour: \$9.51

**Window Cleaner Apprentice (8 - 11 months)**

Employee must be a registered apprentice with the New York State Department of Labor

Effective Period: 7/1/2012 - 12/31/2012  
Wage Rate per Hour: \$22.17  
Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013  
Wage Rate per Hour: \$22.44  
Supplemental Benefit Rate per Hour: \$9.51

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
\$230 PREVAILING WAGE SCHEDULE

**Window Cleaner Apprentice (12 - 15 months)**

Employee must be a registered apprentice with the New York State Department of Labor

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$23.43

Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$23.72

Supplemental Benefit Rate per Hour: \$9.51

**Window Cleaner Apprentice (16 - 17 months)**

Employee must be a registered apprentice with the New York State Department of Labor

Effective Period: 7/1/2012 - 12/31/2012

Wage Rate per Hour: \$24.70

Supplemental Benefit Rate per Hour: \$9.13

Effective Period: 1/1/2013 - 6/30/2013

Wage Rate per Hour: \$25.01

Supplemental Benefit Rate per Hour: \$9.51

**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 Birthday

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.....5 days

1 year but less than 5 years of service.....10 days

5 years of service but less than 15 years of service.....15 days

15 years of service but less than 21 years of service.....20 days

21 years.....21 days

22 years.....22 days

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK  
§230 PREVAILING WAGE SCHEDULE

0 years.....23 days  
1 years.....24 days  
25 years or more of service.....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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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 Contractor to the City (in the event that the invoices state that the material has been purchased by a subcontractor, bills of sale in quadruplicate will also be required transferring title to the materials



from subcontractor to the Contractor).

13. Where the Contractor, with the approval of the Commissioner, has purchased unusually large quantities of materials in order to assure their availability for the work, the Commissioner, at the Commissioner's option, may waive the requirements of Paragraph 12 provided the Contractor furnishes evidence in the form of an affidavit from the Contractor in quadruplicate, and such other proof as the Commissioner may require, that the Contractor is the sole owner of such materials and has purchased them free and clear of all liens and other encumbrances. In such event, the Contractor shall pay for such materials and submit proof thereof, in the same manner as provided in Paragraph 12 hereof, within seven (7) days after receipt of payment 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 (1) 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 (1/2) 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 15<sup>th</sup> to April 15<sup>th</sup>.

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. **RESPONSIBILITY** - 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 (1) 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 41<sup>st</sup> 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 (1) part Portland Cement and one (1) 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 alarm 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 than 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)**

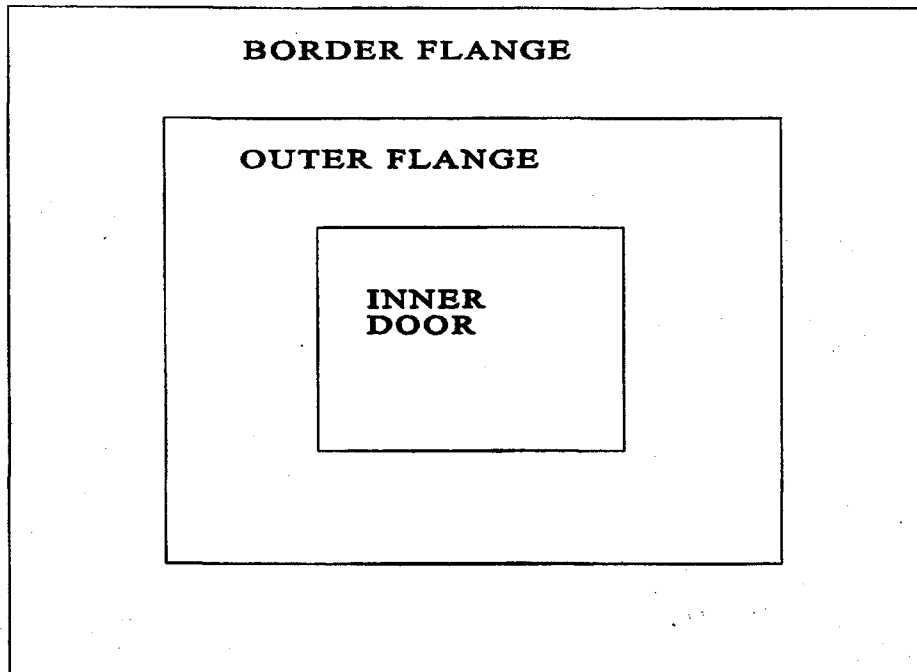
**SCOPE** - This Section sets forth the construction and installation procedure for Switchboards, Panelboards and Cabinets.

- 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 1/2 inch plastic board, extending the full length and width of assembly which shall serve to insulate the bus structure from the back of panel box. Other methods affording equally effective bus structure support and insulation will be given consideration. An insulating barrier shall separate neutral bus from other parts of panel.
- D. CIRCUIT BREAKER ASSEMBLY** - The entire circuit breaker and bus bar assembly shall be mounted on an adjustable metal base or pan and secured to the back of panel box. The panel shall have edges flanged for rigidity.
- E. PANEL MOUNTING** - The panel shall be centered in the panel box to line up with door openings and set level and plumb so that no live parts are exposed with the door open.
- F. PANEL CABINET 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 1/2 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  $\frac{1}{2}$  horsepower or more, magnetic starters and circuit breakers shall be used. Single phase A.C. motors smaller than  $\frac{1}{2}$  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  $\frac{1}{2}$  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 1/2" 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 1/2"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 1/2" 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' warranties. 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:

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**NO TRESPASSING**

**AUTHORIZED PERSONNEL ONLY**

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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 1/2" 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](http://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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**THE CITY OF NEW YORK  
DEPARTMENT OF DESIGN AND CONSTRUCTION  
DIVISION OF BUILDINGS**

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

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**Contract for Furnishing all Labor and Material Necessary**

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Contractor

Dated \_\_\_\_\_, 20\_\_\_\_

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Approved as to Form  
Certified as to Legal Authority

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Acting Corporation Counsel

Dated \_\_\_\_\_, 20\_\_\_\_

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Entered in the Comptroller's Office

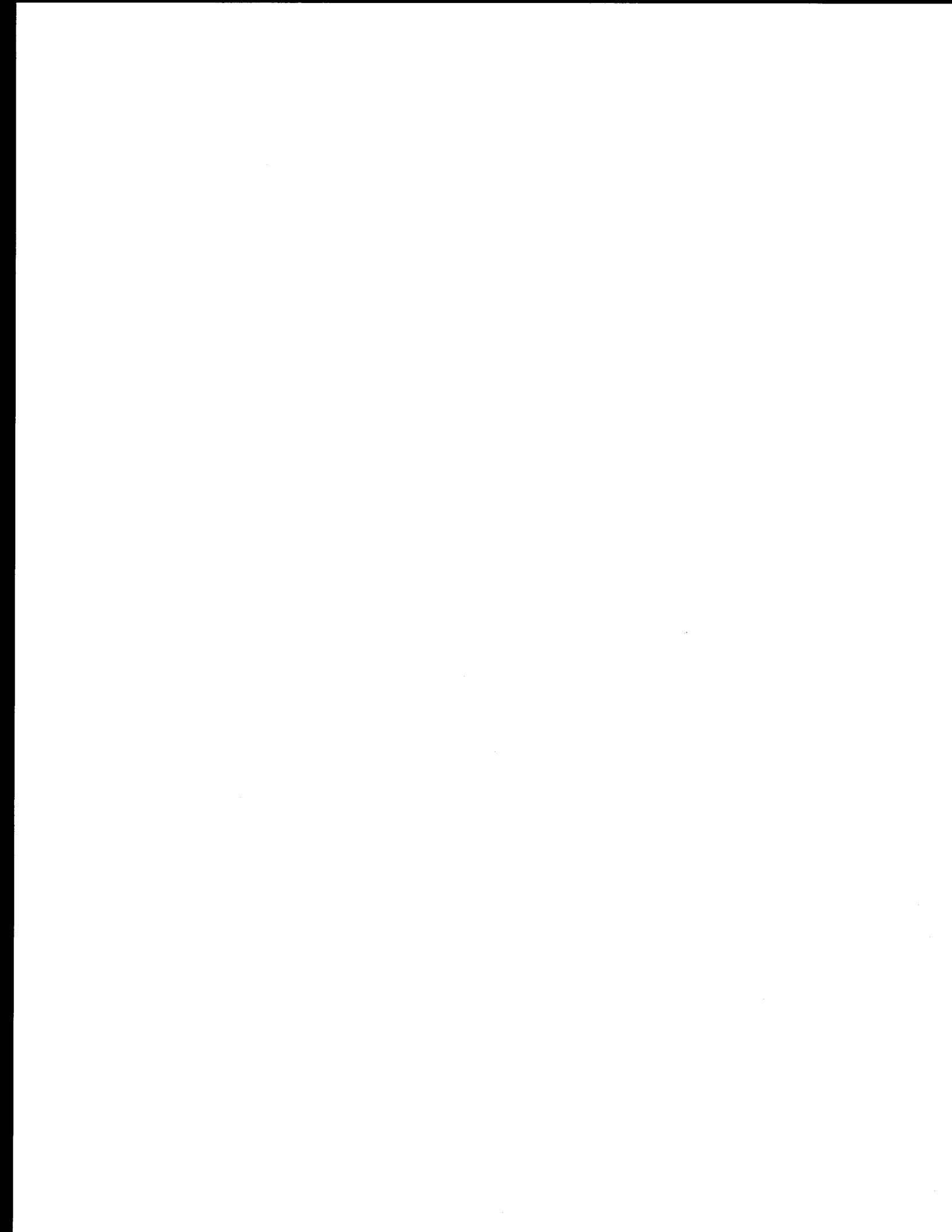
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First Assistant Bookkeeper

Dated \_\_\_\_\_, 20\_\_\_\_











PROJECT ID:

HH112WBLR

**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](http://www.nyc.gov/buildnyc)

**VOLUME 3 OF 3**

**ADDENDUM TO THE GENERAL  
CONDITIONS**

**SPECIFICATIONS**

FOR FURNISHING ALL LABOR AND MATERIALS  
NECESSARY AND REQUIRED FOR:

**Installation of New Central Boiler  
Plant and Fuel Tanks for Wards  
Island Project**

LOCATION:

Clarks Thomas Building, HELP SEC Building,  
Keener Building, Wards Island  
Manhattan 10035

BOROUGH:  
CITY OF NEW YORK

CONTRACT NO. 1

GENERAL CONSTRUCTION WORK

Dept of Homeless Services

Cosentini Associates

Date:

March 25, 2013



W 3-046



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

ADDENDUM TO THE GENERAL CONDITIONS

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The General Conditions are hereby amended in accordance  
with the terms and conditions set forth in this Addendum.

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I. PROJECT DESCRIPTION

FMS #: HH112WBLR

PROJECT NAME: Installation of New Central Boiler Plant and Fuel Tanks for Wards Island Project  
@ Various locations.

**PROJECT DESCRIPTION: Clark Thomas Building:** consists of the demolition and removal of the abandoned steam laundry equipment and piping located in the basement of the Clark Thomas Building; New construction will consist of two (2) new rooms in the basement and the installation of a new fuel oil tank, fuel oil pumps, two (2) new dual fuel low pressure steam boilers and associated piping, ancillary equipment, louvers, and flues. Contract work will also include the connection to the existing steam supply and condensate return main piping in the building's basement and the installation of any/all related electrical, plumbing, and sprinkler systems.

**HELP SEC and Keener Buildings:** consists of the installation of one (1) new prefabricated mechanical room building at both the HELP SEC and Keener Building sites. Each building will have a room for fuel oil tanks and a room for boilers. Each building will also contain two (2) fuel oil tanks, fuel oil pumps, two (2) dual fuel low pressure steam boilers, exhaust fans, louvers, boiler control panels, steam and condensate piping, electrical and fire alarm conduits and wiring, plumbing piping, and sprinklers. Contract work will also consist of the installation of utilities piping from the prefabricated building locations to the locations of the existing HELP SEC and Keener incoming services, and connections to existing building utilities.

PROJECT LOCATION: Clark Thomas Building, HELP SEC Building, & Keener Building, Wards Island  
BOROUGH: Manhattan  
CITY OF NEW YORK  
ZIP CODE: 10035  
COMMUNITY BOARD #: 11

PROJECT MANAGEMENT:

- 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.

### 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.

<u>Article No.</u>	<u>Article</u>	<u>Sub-Article or PART</u> (if applicable)	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
1.04	Contract Drawings	C ) PRINTS / ELECTRONIC FILES		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	

<u>Article No.</u>	<u>Article</u>	<u>Sub-Article or PART (if applicable)</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
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

**VI. ADDITIONAL ARTICLES**

Not Used

**VII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT**

Not Used

## 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	300 ccds
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	\$ 600
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
<p>■ Commercial General Liability      Art. 22.1.1</p>	<p>\$ 1,000,000 per occurrence \$ 2,000,000 aggregate (applicable separately to this Project)</p> <p>Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____</p>
<p>■ Workers' Compensation              Art. 22.1.2</p> <p>■ Disability Benefits Insurance        Art. 22.1.2</p> <p>■ Employers' Liability                    Art. 22.1.3</p> <p><input type="checkbox"/> Jones Act                                  Art. 22.1.4</p> <p><input type="checkbox"/> U.S. Longshoremen's and Harbor Workers Compensation Act      Art. 22.1.4</p>	<p>Workers' Compensation: Statutory per New York State law without regard to jurisdiction</p> <p>Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction</p> <p>Employers' Liability: \$1,000,000 each accident</p>
<p><input type="checkbox"/> Builders' Risk                              Art 22.1.5</p> <p>■ Installation Floater</p>	<p>Applicable to Builders' Risk or Installation Floater:</p> <p>_____ 100 _____ % of total value of Work</p> <p>City of New York and the Contractor named as Loss Payee for the Work in order of precedence, as their interests may appear.</p> <p><u>Note:</u> 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.</p>

**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
<input checked="" type="checkbox"/> Comprehensive Business Auto Coverage Art. 22.1.6	\$ <u>1,000,000</u> per accident  If vehicles are used for transporting hazardous materials, the <b>Contractor</b> 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
<input type="checkbox"/> 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. _____
<input type="checkbox"/> 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.

<input type="checkbox"/> Ship Repairers Legal Liability      Art. 22.1.8(b)	\$ _____ each occurrence [Contracting agency to fill in total value of City vessels involved]
<input type="checkbox"/> 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. _____
<input type="checkbox"/> 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 <input type="checkbox"/> Railroad Protective Liability      _____	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

**SCHEDULE A (FOR PUBLICLY BID PROJECTS)**

**Relating to Article 22 - Insurance**

**PART 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.

<p>[OTHER] <input type="checkbox"/> Art. 22.1.9</p> <p>■ Asbestos Liability</p>	<p>Only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>\$1,000,000 each occurrence, \$2,000,000 aggregate (Combined Single Limit);</p> <p>Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____</p>
<p>[OTHER] <input type="checkbox"/> Art. 22.1.9</p> <p>■ Boiler Insurance</p>	<p>\$200,000</p>
<p>[OTHER] <input type="checkbox"/> Art. 22.1.9</p> <p>■ Professional Liability</p> <p>In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance.</p>	<p>\$1,000,000 per occurrence</p> <p>The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer.</p> <p>Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.</p>

**SCHEDULE A (FOR PUBLICLY BID PROJECTS)**

**Relating to Article 22 - Insurance**

**PART II. Broker's Certification**

[Pursuant to Article 22.3.1(a) of the **Contract**, every Certificate of Insurance must be accompanied by either the following certification by the broker setting forth the following text and required information and signatures or complete copies of all policies referenced in the Certificate of Insurance. In the absence of completed policies, binders are acceptable.]

**CERTIFICATION BY BROKER**

The undersigned insurance broker represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects, and that the described insurance is effective as of the date of this Certification.

\_\_\_\_\_  
[Name of broker (typewritten)]

\_\_\_\_\_  
[Address of broker (typewritten)]

\_\_\_\_\_  
[Signature of authorized official or broker]

\_\_\_\_\_  
[Name and title of authorized official (typewritten)]

Sworn to before me this  
\_\_\_\_\_ day of \_\_\_\_\_, 201\_

\_\_\_\_\_  
NOTARY PUBLIC

**SCHEDULE A (FOR PUBLICLY BID PROJECTS)**

**Relating to Article 22 - Insurance**

**PART III. Address of Commissioner**

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

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30-30 Thomson Avenue, 4<sup>th</sup> Floor

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Long Island City, New York 11101

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**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 13 26	Self-Adhering Sheet Waterproofing (Special Manufacturer)	5 years from date of Substantial Completion
07 13 26	Self-Adhering Sheet Waterproofing (Special Installer)	2 years
07 92 00	Joint Sealants (Special Manufacturer) (Silicon Sealants)	20 years from date of Substantial Completion
07 92 00	Joint Sealants (Special Manufacturer) (Urethane Sealants)	5 years from date of Substantial Completion
07 92 00	Joint Sealants (Special Installer)	2 years from date of Substantial Completion

23 09 10	Special Mechanical System (Prefabricated Mechanical Room Building)	1 year
23 51 00	Boiler breeching	10 years
23 52 00	Boilers and accessories	12 months from date of startup or 18 months from date of shipment, whichever is first.
23 52 00	Boiler pressure vessel – warranty against damage from thermal stress	20 years
23 52 00	Boiler feed system	12 months from date of startup or 18 months from date of shipment, whichever is first.
26 51 00	Lighting Fixtures	5 years
26 51 00	Preheat electromagnetic compact fluorescent lighting ballasts	2 years
31 25 00	Temporary erosion control materials	18 months
31 25 00	Permanent erosion control materials	3 years

(3) **Application:** The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.

(4) **Other Provisions:** The warranty requirements set forth in this Schedule B are also included in the Specifications.

- (a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.
- (b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect.
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (d) In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers, unless otherwise directed in writing by the Commissioner.

**SCHEDULE C**

**Contract Drawings**

(Reference: Article 1.04(A) of the General Conditions)

DRAWING LIST			
DISCIPLINE	SHEET #	SHEET TITLE - DESCRIPTION	SCALE
ARCH	G-001	COVER SHEET	NTS
ARCH	G-002	GENERAL NOTES & ABBREVIATIONS	NTS
ARCH	DM-100	CLARK THOMAS BUILDING BASEMENT DEMO PLAN	1/8"=1'-0"
ARCH	A-100	CLARK THOMAS BUILDING BASEMENT FLOOR PLAN	AS NOTED
ARCH	A-101	CLARK THOMAS BUILDING FIRST FLOOR PLAN - ENLARGED SCALE	AS NOTED
ARCH	A-300	CLARK THOMAS BUILDING PARTIAL NORTH ELEVATION	3/16"=1'-0"
ARCH	A-401	CLARK THOMAS BUILDING DOOR SCHEDULE	AS NOTED
ARCH	A-601	CLARK THOMAS BUILDING PARTITION TYPES & DETAILS	AS NOTED
ARCH	A-701	HELP SEC PREFABRICATED BUILDING PLAN AND ELEVATIONS	AS NOTED
ARCH	A-801	KEENER PREFABRICATED BUILDING PLAN AND ELEVATIONS	AS NOTED
STRUCTURAL	S-001	STRUCTURAL NOTES	NTS
STRUCTURAL	S-002	STRUCTURAL DESIGN CRITERIA	NTS
STRUCTURAL	S-101	CLARK THOMAS BUILDING BASEMENT PLAN	1/4"=1'-0"
STRUCTURAL	S-102	CLARK THOMAS BUILDING SECTIONS AND DETAILS	AS NOTED
STRUCTURAL	S-103	CLARK THOMAS BUILDING FIRST FLOOR AND ROOF FRAMING PLANS	AS NOTED
STRUCTURAL	S-104	HELP SEC BUILDING - MECHANICAL ROOM FOUNDATION PLAN AND DETAILS	AS NOTED
STRUCTURAL	S-105	KEENER BUILDING - MECHANICAL ROOM FOUNDATION PLAN AND DETAILS	AS NOTED
CIVIL	C-100	HELP SEC BUILDING - SITE REMOVALS PLAN	AS NOTED
CIVIL	C-101	KEENER BUILDING - SITE REMOVALS PLAN	AS NOTED
CIVIL	C-200	HELP SEC BUILDING - SOIL EROSION AND SEDIMENT CONTROL PLAN	AS NOTED
CIVIL	C-201	KEENER BUILDING - SOIL EROSION AND SEDIMENT CONTROL PLAN	AS NOTED
CIVIL	C-300	HELP SEC BUILDING - SITE PLAN	AS NOTED
CIVIL	C-301	KEENER BUILDING - SITE PLAN	AS NOTED
CIVIL	C-302	KEENER BUILDING - SITE PLANTING PLAN	AS NOTED
CIVIL	C-400	CLARK THOMAS BUILDING - SITE UTILITY PLAN	AS NOTED
CIVIL	C-401	HELP SEC BUILDING - SITE UTILITY PLAN	AS NOTED
CIVIL	C-402	KEENER BUILDING - SITE UTILITY PLAN	AS NOTED
CIVIL	C-500	CONSTRUCTION DETAILS SHEET 1	NTS
CIVIL	C-501	CONSTRUCTION DETAILS SHEET 2	NTS
CIVIL	C-502	CONSTRUCTION DETAILS SHEET 3	NTS
ENERGY COMPLIANCE	EN-001	CLARK THOMAS BUILDING ENERGY COMPLIANCE SHEET	NTS
ENERGY COMPLIANCE	EN-002	HELP SEC BUILDING ENERGY COMPLIANCE SHEET	NTS
ENERGY COMPLIANCE	EN-003	KEENER BUILDING ENERGY COMPLIANCE SHEET	NTS
MECH	M-001	MECHANICAL NOTES, SYMBOLS, AND ABBREVIATIONS	NTS
MECH	DM-101	CLARK THOMAS BUILDING MECHANICAL BASEMENT DEMOLITION PLAN	1/4"=1'-0"
MECH	M-100	CLARK THOMAS BUILDING MECHANICAL BASEMENT PLAN	1/4"=1'-0"

MECH	M-101	CLARK THOMAS BUILDING MECHANICAL ROOF PLAN	1/8"=1'-0"
MECH	M-110	HELP SEC BUILDING MECHANICAL 1ST FLOOR PLAN	1/4"=1'-0"
MECH	M-111	HELP SEC BUILDING MECHANICAL SITE PLAN	1/8"=1'-0"
MECH	M-112	HELP SEC BUILDING MECHANICAL PREFABRICATED BOILER ROOM PLAN AND SECTIONS	1/4"=1'-0"
MECH	M-120	KEENER BUILDING MECHANICAL BASEMENT PLAN	1/4"=1'-0"
MECH	M-121	KEENER BUILDING MECHANICAL SITE PLAN	1/8"=1'-0"
MECH	M-122	KEENER BUILDING MECHANICAL PREFABRICATED BOILER ROOM PLAN AND SECTIONS	1/4"=1'-0"
MECH	M-200	CLARK THOMAS BUILDING MECHANICAL BASEMENT SECTIONS	1/4"=1'-0"
MECH	M-300	CLARK THOMAS BUILDING MECHANICAL FLOW DIAGRAM	NTS
MECH	M-301	HELP SEC AND KEENER BUILDINGS MECHANICAL FLOW DIAGRAMS	NTS
MECH	M-400	CLARK THOMAS BUILDING MECHANICAL EQUIPMENT SCHEDULES	NTS
MECH	M-401	HELP SEC BUILDING MECHANICAL EQUIPMENT SCHEDULES	NTS
MECH	M-402	KEENER BUILDING MECHANICAL EQUIPMENT SCHEDULES	NTS
MECH	M-500	MECHANICAL DETAILS SHEET 1	NTS
MECH	M-501	MECHANICAL DETAILS SHEET 2	NTS
MECH	M-502	MECHANICAL DETAILS SHEET 3	NTS
MECH	M-503	MECHANICAL DETAILS SHEET 4	NTS
ELEC	E-001	CLARK THOMAS BUILDING SYMBOLS AND DRAWING LIST	NTS
ELEC	E-100	CLARK THOMAS BUILDING ELECTRICAL BASEMENT PLAN	1/4"=1'-0"
ELEC	E-101	CLARK THOMAS BUILDING ELECTRICAL GROUND FLOOR PLAN	1/8"=1'-0"
ELEC	E-102	CLARK THOMAS BUILDING ELECTRICAL SECOND FLOOR PLAN	1/8"=1'-0"
ELEC	E-103	CLARK THOMAS BUILDING ELECTRICAL THIRD FLOOR PLAN	1/8"=1'-0"
ELEC	E-104	CLARK THOMAS BUILDING ELECTRICAL ROOF PLAN	1/8"=1'-0"
ELEC	E-110	HELP SEC BUILDING ELECTRICAL SITE PLAN	AS NOTED
ELEC	E-111	HELP SEC BUILDING ELECTRICAL PREFABRICATED BOILER ROOM PLAN	1/4"=1'-0"
ELEC	E-120	KEENER BUILDING ELECTRICAL SITE PLAN	1/8"=1'-0"
ELEC	E-121	KEENER BUILDING ELECTRICAL PREFABRICATED BOILER ROOM PLAN	1/4"=1'-0"
ELEC	E-300	ELECTRICAL PARTIAL RISER DIAGRAMS	NTS
ELEC	E-400	CLARK THOMAS BUILDING ELECTRICAL SCHEDULES AND DETAILS	NTS
ELEC	E-401	HELP SEC AND KEENER ELECTRICAL DETAILS	NTS
ELEC	E-402	CLARK THOMAS BUILDING CO2 DETECTION NETWORK DIAGRAM	NTS
ELEC	FA-100	CLARK THOMAS BUILDING FIRE ALARM BASEMENT PLAN	1/4"=1'-0"
ELEC	FA-110	HELP SEC BUILDING PREFABRICATED BOILER ROOM & GROUND FLOOR FIRE ALARM PLAN	AS NOTED
ELEC	FA-120	KEENER BUILDING PREFABRICATED BOILER ROOM, BASEMENT, GROUND FLOOR FIRE ALARM PLAN PLAN	AS NOTED
ELEC	FA-301	CLARK THOMAS BUILDING PARTIAL FIRE ALARM RISER DIAGRAM AND OPERATIONS MATRIX	N.T.S.
ELEC	FA-302	HELP SEC BUILDING PARTIAL FIRE ALARM RISER DIAGRAM AND OPERATIONS MATRIX	N.T.S.
ELEC	FA-303	KEENER BUILDING PARTIAL FIRE ALARM RISER DIAGRAM AND OPERATIONS MATRIX	N.T.S.
PLUM	P-001	PLUMBING NOTES, KEY OF SYMBOLS, SCHEDULE AND AND DRAWINGS LIST	NTS
PLUM	P-100	CLARKE THOMAS BUILDING PLUMBING PART PLANS BASEMENT	1/4"=1'-0"
PLUM	P-110	HELP SEC BUILDING PLUMBING PART PLANS	1/4"=1'-0"
PLUM	P-111	HELP SEC BUILDING PLUMBING SITE PLAN	1/8"=1'-0"
PLUM	P-120	KEENER BUILDING PLUMBING PART PLANS	1/4"=1'-0"
PLUM	P-121	KEENER BUILDING PLUMBING SITE PLAN	1/8"=1'-0"
FIRE	SP-001	SPRINKLER NOTES, SYMBOLS AND DRAWINGS LIST	NTS
FIRE	SP-100	CLARKE THOMAS SPRINKLER PART PLAN BASEMENT	1/4"=1'-0"

FIRE	SP-110	HELP SEC BUILDING SPRINKLER PART PLANS	1/4"=1'-0"
FIRE	SP-111	HELP SEC BUILDING SPRINKLER SITE PLAN	1/8"=1'-0"
FIRE	SP-120	KEENER BUILDING SPRINKLER PART PLANS BASEMENT	1/4"=1'-0"
FIRE	SP-121	KEENER BUILDING SPRINKLER SITE PLAN	1/8"=1'-0"

**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. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
BB-1, BB-2 Boiler Blower Motors	Clark Thomas Basement Boiler Room	2	¾	120/1/ 60	HOA	
BFP-1 Boiler Feed Pump Set	Clark Thomas Basement Boiler Room	3	1-1/2	208/3/ 60	DB	
EF-B-1 Exhaust Fan	Clark Thomas Basement Boiler Room	1	1/3	120/1/ 60	T, DB	
EF-B-2 Exhaust Fan	Clark Thomas Basement Boiler Room	1	¾	120/1/ 60	T, DB	
EUH-1 Electric Unit Heater	Clark Thomas Basement Boiler Room	1	1/100	208/3/ 60	T, DB	

EUH-2 Electric Unit Heater	Clark Thomas Building Basement Fuel Oil Tank Room	1	1/100	208/3/ 60	T, DB	
FOP-1 Fuel Oil Pump Set	Clark Thomas Building Basement Fuel Oil Tank Room	2	1/3	208/1/ 60	DB	
EF-R-1 Flue Draft Inducer Fan	Clark Thomas Roof	1	1/2	120/1/ 60	DB	
CFS-1 Chemical Feed Station	Clark Thomas Basement Boiler Room	1	¼	120/1/ 60	DB	
BB-1, BB-2 Boiler Blower Motors	HELP SEC Prefab Boiler Room	2	3	460/3/ 60	HOA	
BFP-1 Boiler Feed Pump Set	HELP SEC Prefab Boiler Room	3	1-1/2	460/3/ 60	DB	
EF-A Exhaust Fan	HELP SEC Prefab Boiler Room	1	½	460/3/ 60	T, DB	
EUH-A Electric Unit Heater	HELP SEC Prefab Boiler Room	1	1/30	460/3/ 60	T, DB	
CFS-1 Chemical Feed Station	HELP SEC Prefab Boiler Room	1	¼	120/1/ 60	DB	
FOP-1 Fuel Oil Pump Set	HELP SEC Prefab Fuel Oil Tank Room	2	1/2	460/3/ 60	DB	
EF-B Exhaust Fan	HELP SEC Prefab Fuel Oil Tank Room	1	1/3	277/1/ 60	T, DB	
EUH-B Electric Unit Heater	HELP SEC Prefab Fuel Oil Tank Room	1	1/100	460/3/ 60	T, DB	
CR-2 Condensate Return Unit	HELP SEC Incoming Steam Service Room	2	1/3	120/1/ 60	DB	

BB-1, BB-2 Boiler Blower Motors	Keener Prefab Boiler Room	2	1-1/2	120/1/ 60	HOA	
BFP-1 Boiler Feed Pump Set	Keener Prefab Boiler Room	3	1-1/2	208/3/ 60	DB	
EF-C Exhaust Fan	Keener Prefab Boiler Room	1	½	208/3/ 60	T, DB	
EUH-C Electric Unit Heater	Keener Prefab Boiler Room	1	1/30	208/3/ 60	T, DB	
CFS-1 Chemical Feed Station	Keener Prefab Boiler Room	1	¼	120/1/ 60	DB	
FOP-1 Fuel Oil Pump Set	HELP SEC Prefab Fuel Oil Tank Room	2	½	208/3/ 60	DB	
EF-D Exhaust Fan	HELP SEC Prefab Fuel Oil Tank Room	1	1/3	120/1/ 60	T, DB	
EUH-D Electric Unit Heater	HELP SEC Prefab Fuel Oil Tank Room	1	1/100	208/3/ 60	T, DB	
CR-2 Condensate Return Unit	Keener Basement Steam to HW Mechanical Room	2	1/3	120/1/ 60	DB	



**SCHEDULE E**

**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.

CONSULTANT: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_  
 DDC PROJECT MANAGER: \_\_\_\_\_  
 TELEPHONE NUMBER: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED: \_\_\_\_\_  
 (DDC RESIDENT ENGINEER/CPM)

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	REC'D	RET'D	ACTION					
01 32 23	Project Survey and Layout	X																					
01 74 19	Waste Management Plan: Submit within 7 days of date established for the Notice to Proceed.	X	X																				

01 74 19	<p>Waste Reduction Progress Reports: Concurrent with each Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:</p> <ol style="list-style-type: none"> <li>1. Material category.</li> <li>2. Generation point of waste.</li> <li>3. Total quantity of waste in tons.</li> <li>4. Quantity of waste recycled, both estimated and actual in tons.</li> <li>5. Total quantity of waste recovered (salvaged plus recycled) in tons.</li> <li>6. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste</li> </ol>	X	X														
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01 74 19	Waste Reduction Calculations: Before Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.	X	X															
01 74 19	Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.	X	X															
01 74 19	Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.	X	X															

01 74 19	<p>Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.</p>	X	X																		
01 74 19	<p>Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.</p>	X	X																		

01 74 19	LEED Submittal: LEED letter template for Credit MR 2, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.	X	X																		
01 74 19	Qualification Data: For waste management coordinator.	X	X																		
01 91 13	General Commissioning Requirements	X																			

02 41 19	<p>Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers for temporary protection of new openings in roof.</p>	X	X													
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02 41 19	<p>Schedule of Selective Demolition Activities:</p> <p>Indicate the following:</p> <ol style="list-style-type: none"> <li>Detailed sequence of demolition and removal work, with starting and ending dates for each activity.</li> <li>Ensure Owner's on-site operations are uninterrupted.</li> <li>Interruption of utility services.</li> <li>Indicate how long utility services will be interrupted.</li> <li>Coordination for shutoff, capping, and continuation of utility services.</li> <li>Use of elevator and stairs.</li> <li>Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.</li> </ol>	X	X																																								
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02 41 19	Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.	X	X																		
02 41 19	Predemolition Photographs or Video: Submit survey of existing conditions with emphasis in areas impacted by the proposed scope of work. Survey is to be submitted before Work begins.	X	X																		
02 41 19	Inventory: Submit a list of items that have been removed and salvaged.	X	X																		
02 80 13	Allowance for Incidental Asbestos Abatement	X																			
03 30 00	Cast-In-Place Concrete and Reinforcement	X																			
03 48 13	Bollards	X																			
04 22 00	Product Data: For each type of product indicated.	X																			

04 22 00	Shop Drawings for Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.	X	X	X																
04 22 00	Qualification Data: For testing agency.	X	X																	
04 22 00	Material Certificates: For each type and size of the following: 1. Masonry units. Include data on material properties. 2. Cementitious materials. Include brand, type, and name of manufacturer. 3. Grout mixes. Include description of type and proportions of ingredients. 4. Reinforcing bars. 5. Joint reinforcement. 6. Anchors, ties, and metal accessories.	X		X																

04 22 00	<p>Mix Designs:  For each type of mortar and grout. Include description of type and proportions of ingredients.  1. Include test reports for mortar mixes required to comply with property specification.  Test according to ASTM C 109/C 109M for compressive strength.  ASTM C 1506 for water retention, and ASTM C 91 for air content.  2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.</p>	X	X							
04 22 00	<p>Cold-Weather and Hot-Weather Procedures:  Detailed description of methods, materials, and equipment to be used to comply with requirements.</p>	X	X							
X										

05 12 00	Structural steel	X	Erect on plans, piece details, connections																	
07 13 26	Self-Adhering Sheet Waterproofing	X																		
07 84 13	Product Data: For each type of product indicated	X		X																

07 84 13	<p>Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency. 1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.</p>	X	X						
07 84 13	<p>Qualification Data: For qualified installer.</p>	X	X						

07 84 13	Installer Certificates: From Installer indicating firestopping has been installed in compliance with requirements and manufacturer's written recommendations	X																			
07 84 13	Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for penetration firestopping.	X									X										
07 84 46	Product Data: For each type of product indicated.	X									X										

07 84 46	<p>Product Schedule: For each fire-resistive joint system. Include location and designation of qualified testing agency. Where 1. Where Project conditions require modification to a qualified testing agency's illustration for a particular fire-resistive joint system condition, submit illustration, with modifications marked, approved by fire-resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance rated assembly.</p>	X	X				
07 84 46	<p>Qualification Data: For qualified Installer.</p>		X				

07 84 46	Installer Certificates: From Installer indicating fire-resistant joint systems have been installed in compliance with requirements and manufacturer's written recommendations.	X																				
07 84 46	Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified agency, for fire-resistive joint systems.	X																				
07 92 00	Product Data: For each joint-sealant product indicated.	X																				
07 92 00	LEED Submittals: 1. Product Data for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation including printed statement of VOC content.	X																				



07 92 00	Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealant showing the full range of colors available for each product exposed to view.	X	X																																						
07 92 00	Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealant.	X	X																																						

07 92 00	Joint-Sealant Schedule: Include the following information: 1. Joint-sealant application, joint location, and designation. 2. Joint-sealant manufacturer and product name. 3. Joint-sealant formulation. 4. Joint-sealant color.	X	X																	
07 92 00	Qualification Data: For qualified installer.	X	X																	
07 92 00	Product Certificates: For each kind of joint sealant and accessory, from manufacturer.	X	X				X													
07 92 00	Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.	X	X				X													

07 92 00	Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.	X																						
07 92 00	Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.	X	X																					
07 92 00	Field-Adhesion Test Reports: For each sealant application tested.	X	X																					
07 92 00	Warranties: Sample of special warranties.	X																						X

08 12 13	<b>Product Data:</b> 1. For each product type indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.	X	X															
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08 12 13

Shop Drawings: Include the following:  
1. Frame details for each frame type, including dimensioned profiles and metal thickness.  
2. Locations of reinforcement and preparations for hardware.  
3. Details of each different wall opening condition.  
4. Details of anchorages, joints, field splices, and connections.  
5. Details of accessories.  
6. Details of moldings, removable stops, and glazing.  
7. Details of conduit and preparations for power, signal, and control systems.

X

X

08 12 13	<p>Samples for Verification:</p> <p>1. For the following items, prepared on Samples about 12 by 12 inches to demonstrate compliance with requirements for quality of materials and construction:</p> <p>a. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow metal panels and glazing if applicable.</p>	X		X																
08 12 13	<p>Other Action Submittals:</p> <p>1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.</p>	X	X																	

08 12 13	Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified agency, for each type of hollow metal frame assembly.	X	X																	
08 70 10	Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.	X																		
08 70 10	Hardware supplier shall prepare and submit for approval 6 copies of the complete detailed hardware schedule. This shall be done within 30 working days after receipt of Award of Contract.	X	X																	
08 70 10	Samples: For each finish, color, and texture required for each type of door hardware indicated.	X																		

08 70 10	<p>The Architect will check the schedule submitted for quality and types, but the supplier of hardware shall be solely responsible for any errors or omissions of the schedules, and all security hardware equal in kind and quality to that herein specified or required shall be supplied.</p>	X									
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08 70 10	<p>Identify hardware items unsuitable for use as scheduled. 1 If requested by the Architect, a sample of each hardware item shall be supplied as required for comparison with hardware as furnished. Any deviation from hardware schedule shall be replaced with the proper hardware at hardware supplier's expense. 2 Templates and/or shop drawing information shall be sent to each manufacturer who requires such information. Approved hardware schedule shall be sent to each manufacturer who requires template information.</p>	X	X					
21 05 00	Common Work Results for Fire Protection	X						



23 05 50	Basic Mechanical Materials and Methods	X																	
23 05 93	Testing, Balancing, and Adjusting	X																	
23 07 00	HVAC Insulation	X							X										
23 09 00	HVAC Instrumentation and Controls	X																	
23 09 10	Special Mechanical Systems (Pre-Fabricated Mechanical Buildings)	X																	
23 09 96	Enclosed Controllers	X																	
23 11 13	Fuel Oil System Products	X																	
23 11 13	Fuel Oil System Piping and Field Built Tank	X																	
23 21 13	HVAC Piping	X																	
23 21 23	HVAC Pumps	X																	
23 25 00	Chemical Water Treatment	X																	
23 31 13	Metal Ductwork	X																	
23 33 13	Dampers	X																	
23 51 00	Breechings and Stacks	X																	
23 52 00	Heat Generation	X																	
26 05 00	Electrical System Layout	X																	
26 05 19	Conductors and Cables	X																	
26 05 26	Grounding and Bonding	X																	



26 60 03	Fire Protective Alarm System	X																				
26 60 04	Carbon Monoxide Gas Detection System	X																				
31 00 00	Retaining wall & Light pole foundation @ Help Sec	X	X																			
31 11 00	Soil Clearing, Removals and Preparation	X																				
31 25 00	Soil Erosion and Sediment Control	X																				
32 05 16	Aggregate material to be placed in utility trenching	X					X															
32 12 16	Asphalt paving mix including sealants	X					X															
32 16 00	Concrete curb strength data and base aggregate description	X					X															
32 90 00	Landscape Planting	X						X														
32 92 00	Lawns and Grasses	X						X														
33 02 00	Protection of Existing Utilities	X																				
33 11 16	Water service pipe	X								X												
33 31 00	Sanitary Sewer System	X								X												
33 41 13	Pipe material cut sheet and sanitary/drain age structures shop drawing	X	X																			
33 49 00	Storm Structures	X																				

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Installation of New Central Boiler Plant and Fuel Oil Tanks for Wards Island Project  
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Clark Thomas, Keener and HELP SEC Buildings

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26 29 13	Enclosed Controllers (Installation of)
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26 60 03	Fire Protective Alarm System
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APPENDIX A

Geotechnical Engineering Study for Central Boiler Replacement Project, Ward's Island, New York

Installation of New Central Boiler Plant and Fuel Oil Tanks for Wards Island Project  
Project ID No. HH112WBLR  
Clark Thomas, Keener and HELP SEC Buildings

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**CONTRACT # 1**  
**GENERAL CONSTRUCTION WORK**

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## **SECTION 01 32 23 – PROJECT SURVEY AND LAYOUT**

### **PART 1 - GENERAL**

#### **1.1 SCOPE OF SERVICES**

- A. The contractor shall provide construction stakeout sufficient to construct the proposed improvement in accordance with the approved construction plans.
- B. All stakeout services shall be completed under the direct supervision of a Professional Land Surveyor licensed in the State where the project is located
- C. The Commissioner shall provide the following prior to the commencement of any stake-out services:
  - 1. Dimensional control plans in electronic format referenced to the site boundary or on-site survey control;
  - 2. Copies of the topographic and boundary survey that the Contract Drawings have been based on.
  - 3. A minimum of two benchmarks and a monumented baseline (minimum of 3 points) related to the site boundary which shall be used for vertical and horizontal control.

#### **1.2 RELATED SECTION**

- A. N/A

#### **1.3 REFERENCE STANDARDS**

- A. In accordance with local rules and regulations.

#### **1.4 QUALITY ASSURANCE**

- A. All construction layout work shall be performed under the direction of a Professional Land Surveyor licensed in New York.
- B. The survey crew will discuss all layout procedures with the contractor's supervisor prior to commencing work.
- C. The survey crew daily report shall be filled out and signed by the contractor's supervisor at the end of that day's layout.

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- D. Copies of sketches, cut sheets, etc. shall be provided to the contractor by the surveyor by the end of the next workday.
- E. All costs related re-staking due to construction or contractors' work resulting in destruction or movement of stakes shall be paid for by the contractor and at no additional expense to the City of New York.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. The contractor/surveyor shall supply all stakeout materials.

2.2 EQUIPMENT

- A. The Contractor/Surveyor shall supply all equipment necessary to accomplish the work.

PART 3 – NOT USED

END OF SECTION 01 32 23

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Recycling nonhazardous demolition and construction waste.
  - 2. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
  - 1. Division 02 Section "Selective Structure Demolition" for disposition of waste resulting from partial demolition of concrete, structures, and site improvements.
  - 2. Division 04 Section "Concrete Unit Masonry" for disposal requirements for masonry waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or 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 demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 75 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the

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use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for the Notice to Proceed.

1.6 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste recycled, both estimated and actual in tons.
5. Total quantity of waste recovered (salvaged plus recycled) in tons.
6. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

- E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

- F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

- G. Qualification Data: For waste management coordinator.

1.7 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.



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1.8 WASTE MANAGEMENT PLAN

- A. **General:** Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. **Waste Identification:** Indicate anticipated types and quantities of demolition site-clearing and construction waste generated by the Work. Use Form CWM-1 for construction waste and Form CWM-2 for demolition waste. Include estimated quantities and assumptions for estimates.
- C. **Waste Reduction Work Plan:** List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Form CWM-3 for construction waste and Form CWM-4 for demolition waste. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
  - 1. **Recycled Materials:** Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
  - 2. **Disposed Materials:** Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
  - 3. **Handling and Transportation Procedures:** Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. **General:** Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. **Waste Management Coordinator:** Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.
- C. **Training:** Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
  - 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.

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D. 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. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

### 3.2 RECYCLING DEMOLITION AND CONSTRUCTION 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 Commissioner.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until 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 without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Commissioner's property and transport to recycling receiver or processor.

### 3.3 RECYCLING DEMOLITION WASTE

A. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

1. Pulverize concrete to maximum 1-1/2-inch (38-mm) size.
2. Crush concrete and screen to comply with requirements in Division 31 Section "Earth Moving" for use as satisfactory soil for fill or subbase.

B. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

1. Pulverize masonry to maximum 1-inch (25-mm) size.
  - a. Crush masonry and screen to comply with requirements in Division 31 Section "Earth Moving" for use as general fill.

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2. Clean and stack undamaged, whole masonry units on wood pallets.
- C. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- D. Metals: Separate metals by type.
  1. Structural Steel: Stack members according to size, type of member, and length.
  2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- E. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- F. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
- G. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.
- H. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
  1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- I. Carpet Tile: Remove debris, trash, and adhesive.
  1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- J. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- K. Conduit: Reduce conduit to straight lengths and store by type and size.

### 3.4 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.
- B. Wood Materials:
  1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
  2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

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3.5 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: Remove waste materials from Commissioner's property and legally dispose of them.

3.6 ATTACHMENTS

- A. Form CWM-1 for construction waste identification.
- B. Form CWM-2 for demolition waste identification.
- C. Form CWM-3 for construction waste reduction work plan.
- D. Form CWM-4 for demolition waste reduction work plan.
- E. Form CWM-5 cost/revenue analysis of construction waste reduction work plan.
- F. Form CWM-6 cost/revenue analysis of demolition waste reduction work plan.
- G. Form CWM-7 for construction waste
- H. Form CWM-8 for demolition waste.

END OF SECTION 017419

## SECTION 02 41 19 - SELECTIVE STRUCTURE DEMOLITION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
- 2. Demolition and removal of selected site elements.
- 3. Salvage of existing items to be reused or recycled.

- B. Related Requirements:

- 1. Division 01 Section "Execution" for cutting and patching procedures.
- 2. Division 01 Section "Construction Waste Management and Disposal".

#### 1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Commissioner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

#### 1.4 MATERIALS COMMISSIONERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Items of interest or value to Commissioner that may be uncovered during demolition remain the property of Commissioner.

1. Carefully salvage in a manner to prevent damage and promptly return to Commissioner.

## 1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
  1. Inspect and discuss condition of construction to be selectively demolished.
  2. Review structural load limitations of existing structure.
  3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
  5. Review areas where existing construction is to remain and requires protection.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers for temporary protection of new openings in roof.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Commissioner's on-site operations are uninterrupted.
  2. Interruption of utility services. Indicate how long utility services will be interrupted.
  3. Coordination for shutoff, capping, and continuation of utility services.
  4. Use of elevator and stairs.
  5. Coordination of Commissioner's continuing occupancy of portions of existing building and of Commissioner's partial occupancy of completed Work.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Commissioner prior to start of demolition.
- D. Predemolition Photographs or Video: Submit survey of existing conditions with emphasis in areas impacted by the proposed scope of work. Survey is to be submitted before Work begins.

## 1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

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1.8 FIELD CONDITIONS

- A. Commissioner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Commissioner's operations will not be disrupted.
- B. Comply with the following for cutting and core drilling over areas occupied by Commissioner.
  - 1. Coordinate and cooperate with Commissioner in moving and providing protection for items before cutting or core drilling.
  - 2. Before cutting or core drilling, remove from ceiling space in areas to be cut or core drilled, those items susceptible to damage from drilling operations.
    - a. Such items may include but are not limited to ceiling panels or tiles, light fixtures, speakers and smoke detectors.
    - b. If ductwork, piping or other obstructions in ceiling space conflict with cutting or core drilling locations, notify Commissioner and await direction before proceeding.
  - 3. Before cutting or core drilling, move furniture from below areas to be core drilled.
  - 4. Protect ductwork, carpet and other items which cannot be moved, from damage by drilling operations.
  - 5. After cutting and core drilling operations in an area are complete, replace removed items and furniture to original locations. Clean areas of all evidence of drilling operations.
    - a. Coordinate and cooperate with Commissioner in cleaning and related operations.
- C. Conditions existing at time of inspection for bidding purpose will be maintained by Commissioner as far as practical.
  - 1. Before selective demolition, Commissioner will remove the following items:
    - a. Stored items in the basement area that could potentially impede the progress of the Work.
- D. Notify Commissioner of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- E. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Commissioner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Commissioner and Commissioner. Hazardous materials will be removed by Commissioner under a separate contract.
- F. Storage or sale of removed items or materials on-site is not permitted.

- G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

- 1. Maintain fire-protection facilities in service during selective demolition operations.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Commissioner. Commissioner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Commissioner.
- E. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
  - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
  - 1. Comply with requirements specified in General Conditions "Progress Photographs."



2. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction through photographs, molds, templates, and/or measured drawings.

### 3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  1. Commissioner will arrange to shut off indicated services/systems when requested by Contractor.
  2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
  3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
    - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
    - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Commissioner.
    - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

### 3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

### 3.4 SELECTIVE DEMOLITION, GENERAL

- A. Use of explosives is not permitted.
- B. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.

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6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management and Disposal."

C. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Commissioner.
4. Transport items to Commissioner's storage area off-site as designated by Commissioner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Commissioner, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

E. Roofing: Remove no more existing roofing than what can be covered in one day by temporary protection and so that building interior remains watertight and weathertight.

1. Remove existing roof membrane and flashings where indicated, only to the extent needed for new openings.
2. Remove existing roofing system down to substrate.

### 3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Commissioner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Commissioner's property and legally dispose of them.

### 3.7 CLEANING

A. Clean adjacent areas and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

**SECTION 028013 – GENERAL CONTRACTOR WORK**  
**ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT**

**1.01 SCOPE FOR ASBESTOS ABATEMENT WORK**

- A. The "General Conditions" apply to the work of this Section.
- B. The Asbestos abatement contractor shall remove asbestos containing materials as needed to perform the other work of this Contract when discovered during the course of work. When required, the Asbestos abatement contractor shall replace the ACM with non-asbestos containing materials. An allowance of **\$45,000.00** 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

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

(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 than regular working hours and such authorization is granted by the Commissioner. (Regular work hours are those hours during which any given facility, in which work is to be

done, is customarily open and functioning, normally between the hours of 8:00 A.M. and 4:00 P.M. Monday - Friday.) If such work schedule is authorized by the Commissioner, the work shall be done at no additional cost to the City.

- J. The Commissioner may order that work be done in other than regular working hours as herein by defined and this order may require the Asbestos abatement contractor to pay premium or overtime wages to complete the work. If the Commissioner orders work in other than regular working hours, the Asbestos abatement contractor shall multiply the unit price for that portion of the work requiring premium wages by 1.50 when computing payment in accordance with Paragraph 1.09. All requests for premium payment must be supported by certified payroll sheets and field sheets approved by the Construction Project Manager.

## 1.02 QUALIFICATIONS OF ASBESTOS ABATEMENT CONTRACTOR

- A. Requirements: The asbestos abatement contractor must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (5) below. The asbestos abatement contractor must, submit documentation demonstrating compliance with all listed requirements. Such documentation shall include without limitation, all required licenses, certificates, and documentation.
1. The asbestos abatement contractor must, whether an individual, corporation, partnership, joint venture or other legal entity, must demonstrate for the three year period prior to the work, that it has been licensed by the New York State Department of Labor, as an "Asbestos abatement contractor".
  2. The asbestos abatement contractor must, for the three year period prior to the work, have been in the business of providing asbestos abatement services as a routine part of its daily operations.
  3. The asbestos abatement contractor proposing to do asbestos abatement work must be thoroughly experienced in such work and must provide evidence of having successfully performed and completed in a timely fashion at least five (5) asbestos abatement projects of similar size and complexity. The aggregate cost of these projects must be at least \$250,000.00 in each of the three years.
  4. For each project submitted to meet the experience requirements set forth above, the asbestos abatement contractor must submit the following information for the project; name and location of the project; name title and telephone number of the owner or the owner's representative who is familiar with the asbestos abatement contractor's work, brief description of the work completed as a prime or sub-asbestos abatement contractor; amount of contract or subcontract and the date of completion.

5. The asbestos abatement contractor must demonstrate that it has the financial resources, supervisory personnel and equipment necessary to carry out the work and to comply with the required performance schedule, taking into consideration other business commitments. The asbestos abatement contractor must submit such documentation as may be required by the Department of Design and Construction to demonstrate that it has the requisite capacity to perform the required services of this contract.
- B. Insurance Requirements: The asbestos abatement contractor must provide asbestos liability insurance in the following amount: 1 million dollars per occurrence, 2 million dollars aggregate (combined single limit). The City of New York shall be named as an additional insured on such insurance policy.
- C. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof.

### **1.03 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES**

The Asbestos abatement contractor will visit the subject location within one (1) working day of notification to ascertain actual work required. If the project is identified as being "urgent", then work shall commence no later than 48 hours from the time of notification. In this event, the asbestos abatement contractor shall immediately notify when applicable EPA NESHAPS Coordinator, NYSDOL Asbestos Control Bureau and NYCDEP Asbestos Control Program of start of the work and file the necessary Asbestos Notifications and any applicable Variance Applications with the regulatory agencies cited above..

In the event that the project is not classified as "urgent" the Asbestos abatement contractor shall notify the EPA NESHAPS Coordinator, NYSDOL and NYCDEP by submitting the requisite asbestos project notification forms, postmarked 10 days before activity begins if 260 linear feet or more and/or 160 square feet or more of asbestos containing material will be disturbed.

The following information must be included in the notification:

- A. Name and address of building City or operator;
- B. Project description:
  1. Size - square feet, number of linear feet, etc;
  2. Age - date of construction and renovations (if known);
  3. Use - i.e., office, school, industrial, etc.



4. Scope - repair, demolition, cleaning, etc.
- C. Amount of asbestos involved in work and an explanation of techniques used to determine the amount;
- D. Building location/address, including Block and Lot numbers;
- E. Work schedule including the starting and completion dates;
- F. Abatement methods to be employed;
- G. Procedures for removal of asbestos-containing material;
- H. Name, title and authority of governmental representative sponsoring project.

**1.04 WORK INCLUDED IN UNIT PRICE**

The Asbestos abatement contractor will be paid a basic unit price of **\$25.00** per square feet for the removal and disposal of asbestos containing material and replacement of the same with non-asbestos containing materials.

Unit price shall include all costs necessary to do the work of this Contract, including but not limited to: labor, materials, equipment, utilities, disposal, insurance, overhead and profit.

**1.05 AIR MONITORING - ASBESTOS ABATEMENT CONTRACTOR**

- A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.
- B. Air monitoring of Asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).
- C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

**1.06 THIRD PARTY MONITORING AND LABORATORY**

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).
- C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the Asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.
- D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.

**1.07 PAYMENT REQUEST DOCUMENTATION**

- B. The following information shall be included for each payment request:
  - 1. Description of work performed.
  - 2. Linear footage and pipe sizes involved.
  - 3. Square footage for boiler & breaching insulation removed.
  - 4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.
  - 5. Square footage of encapsulation, sealing, patching, and painting involved.
  - 6. Total cost associated with compliance with the assigned task.

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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.

<u>PIPE INSULATION SIZE O.D.</u>	<u>PIPE SIZE O.D.</u>	<u>SQUARE FOOTAGE PER LINEAR FOOT</u>
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

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12"	8"	3.14
14"	10"	3.67
16"	12"	4.19
18"	14"	4.71

**1.09 METHOD OF PAYMENT**

Payment shall be made in accordance with Items A through R below. Payment shall be calculated based on the actual quantity of the item performed by the asbestos abatement 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.

$$100 \times 0.65 = 65 \text{ sq.ft.} \quad 65 \times \text{unit price} = \text{Payment}$$

$$100 \times 2.62 = 262 \text{ sq.ft.} \quad 262 \times \text{unit price} = \text{Payment}$$

- B. REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER INSULATION:** (all types including Silicate Block and including the removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

EXAMPLE: Item B. removal and replacement of 1000 S.F. of boiler insulation (incl. Silicate block)

$$1000 \text{ S.F.} \times (1.5) \times \text{the Unit Price} = \text{Payment}$$

- C. REMOVAL, DISPOSAL AND REPLACEMENT OF TANK INSULATION:** (all types including removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

- D. REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER UPTAKE, & BREACHING INSULATION:** (all types including stiffening angles and wire lath) Payment shall be made at 2.0 times the unit price per square foot.

- E. REMOVAL, DISPOSAL AND REPLACEMENT OF DUCT INSULATION:** Payment shall be made at 1.0 times the unit price per square foot.

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- 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.

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- 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



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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,

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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**

## SECTION 03 30 00 — CAST-IN-PLACE CONCRETE

### PART 1 — GENERAL

#### 1.1 GENERAL

- A. Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- B. Use resources and energy to the fullest extent possible in the completion of the project. Resource-efficient aspects to be considered in completing this project include use of techniques that minimize waste generation, re-use of materials, on-site where possible, and recycling of waste generated during the construction process.
- C. In the selection of the products and materials of this section, 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. Does not contain methylene-chloride.
  - 10. Does not contain chlorinated hydrocarbons.
  - 11. Contains the least possible extent of post-consumer or post-industrial waste.

#### 1.2 DESCRIPTION OF WORK

- A. Extent of concrete work shown on drawings.

#### 1.3 DEFINITIONS

- A. Supplementary Cementitious Materials: Blended hydraulic cement, fly ash and other

pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

- B. Cementitious Materials: Portland cement alone or in combination with one or more supplementary cementitious materials; subject to compliance with requirements.

#### 1.4 SUBMITTALS

- 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.

- B. Shop Drawings:

1. No work may commence until all relevant shop drawings have been reviewed and final "Approval with no exceptions" has been granted.
2. 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, and arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures. No erection and concrete placement in the field may proceed without approved reinforcement shop drawings. Submit formwork shop drawings indicating all details and dimensions for architect/engineer review and approval.

- C. Samples: Submit samples of materials, including names, sources and descriptions.

- D. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test.

- E. Material Certificates: Provide materials certificates in lieu of materials laboratory test reports when permitted by Commissioner. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

#### 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. Building Code of City of New York.
2. American Concrete Institute (ACI) 117-90 Standard Specifications for Tolerances for Concrete Construction and Materials.
3. ACI 211.1-91 (Rev. 2009) Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
4. ACI 301 Specifications for Structural Concrete for Buildings.

Installation of New Central Boiler Plant and Fuel Oil Tanks for Wards Island Project  
Project ID No. HH112WBLR  
Clark Thomas, Keener and HELP SEC Buildings

5. ACI 302.1R-04 Guide for Concrete Floor and Slab Construction.
  6. ACI 305R-99 Hot Weather Concreting.
  7. ACI 306R1-90 (Re-approved 2002) Cold Weather Concreting.
  8. ACI 308 (Rev. 2008) Standard Practice for Curing Concrete.
  9. ACI 315 Details and Detailing of Concrete Reinforcement.
  10. ACI 318 Building Code Requirements for Reinforced Concrete.
  11. ACI 347 Recommended Practice For Concrete Formwork.
  12. ASTM C 260 Standard Specification for Air-Entraining Admixtures for Concrete.
  13. ASTM C 494 Standard Specification for Chemical Admixtures for Concrete.
  14. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice.
- B. Concrete Testing Service: Engage a testing laboratory 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. Before commencing work, the contractor 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.
- 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 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 one year from the date of the final certificate of occupancy.

## 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 two 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.

### 2.2 REINFORCING MATERIALS

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products such that post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 60 percent.
- B. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- C. Steel Wire: ASTM A 82, plain, cold-drawn steel.
- D. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- E. Synthetic Structural Macro Fibers: ASTM C 1116, minimum of 2 inches (50 mm) length, aspect ratio of 50 to 90, and a UL Rating. The fiber shall have a minimum dosage of 4 lbs. per cubic yard and a minimum average residual strength (ARS) of 200 psi measured as per ASTM C 1399 "Test Method for Obtaining Average Residual Strength of Fiber-Reinforced Concrete".



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Products: Subject to compliance with requirements, provide one of the following:

"Tuf-Strand SF"  
"Strux 90/40"

Euclid Chemical Co.  
W. R. Grace

- F. 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 slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
  2. For Footings, use bricks made of stone concrete with a minimum compressive strength of 4,000 psi at 28 days.
  3. 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 or II, ASTM C 1157, Type GU or LH. Use one brand of cement throughout project, unless otherwise acceptable to Architect.
- B. Ground, Granulated Blast Furnace Slag: ASTM C 989, Grade 100 or 120.
- C. Fly Ash: ASTM C 618, Type C or Type F.
- D. Silica Fume: ASTM C 1240, amorphous silica.
- E. 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.
  2. Combined aggregate gradation for slabs and other designated concrete shall be 8 percent to 18 percent for large top size aggregates (1 1/2 in.) or 8 percent to 22 percent for smaller top size aggregates (1 in. or 3/4 in.) retained on each sieve below the top size and above the No. 100.
- F. Water: Drinkable.
- G. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

Products: Subject to compliance with requirements, provide one of the following:

"Air-Mix" or "AEA 92"

Euclid Chemical Co.

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"Sika Aer" or "Sika AEA-15"	Sika Corp.
"MB-VR" or "MB-AE"	BASF
"Darex AEA" or "Daravair"	W.R. Grace.

- H. Water-Reducing Admixture: ASTM C 494, Type A, containing not more than 0.05 percent chloride ions.

Products: Subject to compliance with requirements, provide one of the following:

"WRDA Hycol"	W.R. Grace.
"Eucon WR-91"	Euclid Chemical Co.
"Plastol 341"	Euclid Chemical Co.
"Pozzolith 322N"	BASF
"Plastocrete 161"	Sika Corp.

- I. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F or Type G, containing not more than 0.05 percent chloride ions.

Products: Subject to compliance with requirements, provide one of the following:

"Eucon 37/1037"	Euclid Chemical Co.
"Plastol Series"	Euclid Chemical Co.
"Daracem" or "ADVA"	W. R. Grace
"Rheobuild 1000"	BASF
"Sikament 300"	Sika Corp.
"Sikament 86"	Sika Corp.

- J. Water-Reducing, Non-Corrosive Accelerating Admixture: The admixture shall conform to ASTM C 494, Type C or E, containing not more chloride ions than are present in municipal drinking water. The admixture manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least one year's duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures.

Products: Subject to compliance with requirements, provide one of the following:

"Accelguard 80"	Euclid Chemical Co.
"Polarset"	W. R. Grace
"Plastocrete 161 FL"	Sika Corp.
"Pozzutec 20"	BASF

- K. Water-Reducing, Retarding Admixture: ASTM C 494, Type D, containing not more than 0.05 percent chloride ions.

Products: Subject to compliance with requirements, provide one of the following:

"Pozzolith 100XR"	BASF
"Eucon Retarder 75"	Euclid Chemical Co.
"Daratard 17"	W.R. Grace.
"Plastiment"	Sika Co.

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- L. Corrosion inhibitor: 30 percent calcium nitrite (where called for in the specifications or on the drawings).

Products: Subject to compliance with requirements, provide one of the following:

"Eucon CIA"	Euclid Chemical Co.
"DCI"	W.R. Grace & Co.
"Rheocrete CNI"	BASF

- M. Microsilica: Admixture shall be dry densified or slurry formed. Microsilica shall come from the same source throughout the project. If a single source cannot be maintained, laboratory testing of each new source shall be required before acceptance by the Engineer at no cost to the owner.

Products: Subject to compliance with requirements, provide one of the following:

"Force 10,000"	W. R. Grace
"Eucon MSA"	Euclid Chemical Co.
"Emsac F 100"	Elkem Chemical, Inc.
"Sikacrete 950DP"	Sika Corp.
"Rheomac SF 100"	BASF

- N. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions are not permitted.
- O. 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.

#### 2.4 RELATED MATERIALS

- A. Reglets: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 26 gage galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.
- B. Waterstops: Provide flat, dumbbell or center-bulb waterstops at construction joints and other joints as indicated sized to suit joints.

1. Rubber waterstops: Corps of Engineers CRD-C 513.

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

The Burke Co.  
Progress Unlimited  
Williams Products

2. Polyvinyl Chloride Waterstops: Corps of Engineers CRD-C 572.

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

The Burke Co  
W.R. Meadows  
Progress Unlimited

3. Bentonite Waterstops: Volclay Waterstop RX as manufactured by the American Colloid Co.
- C. Granular Base: Evenly graded mixture of fine and coarse aggregates to provide, when compacted, a smooth and even surface below slabs on grade.
- D. Non-Shrink, Non-Metallic Grout: The grout shall be pre-mixed by the factory and shall conform to ASTM C 1107, "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 when placed at a fluid consistency, the grout shall achieve 95 percent bearing under a 48" x 48" base plate.

Products: Subject to compliance with requirements, provide one of the following:

"Euco-NS"	Euclid Chemical Co.
"Five Star Grout"	U.S. Grout Corp.
"Masterflow 555"	Chemrex
"SikaGrout 212"	Sika Corp.

- E. Non-slip Aggregate Finish: Provide fused aluminum oxide grits or crushed emery as abrasive aggregate for non-slip finishes. Emery aggregate shall contain not less than 40 percent aluminum oxide and not less than 25 percent ferric oxide. Use material that is factory-graded, packaged, rust-proof and non-glazing and is unaffected by freezing, moisture and cleaning materials.
- F. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd. and shall comply with AASHTO M 182, Class 2.
- G. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.
  1. Waterproof paper.
  2. Polyethylene film.
  3. Polyethylene-coated burlap.
- H. Crack Sealer: Two-component hybrid urethane repair liquid used to mend cracks in concrete. Sealer shall be an ultra-low viscosity material formulated to penetrate deep into cracks and shall dry to allow foot traffic after 10 minutes and heavy traffic in one hour.

Products: Subject to compliance with requirements, provide the following:

"Euco QWIKstitch"	Euclid Chemical Co.
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- I. Underlayment Compound: Free flowing, self-leveling, pumpable cementitious base

compound.

Products: Subject to compliance with requirements, provide one of the following:

"Flo-Top"	Euclid Chemical Co.
"Super Flo-Top"	Euclid Chemical Co.
"Ardex"	Ardex Co.
"Mastertop 110 Underlayment"	Chemrex

J. Bonding Admixture: Latex non-rewettable type.

Products: Subject to compliance with requirements, provide one of the following:

"Flex-Con"	Euclid Chemical Co.
"Daraweld C"	W.R. Grace
"SBR Latex"	Euclid Chemical Co.
"Sika Latex"	Sika Corp.
"Acryl Set"	Chemrex

K. Evaporation Retarder:

Products Subject to compliance with requirements, provide one of the following:

"Eucobar"	Euclid Chemical Co.
"Confilm"	BASF

L. Repair Topping: Self-leveling, polymer-modified high-strength topping. Maximum depth of wear of treated concrete shall be 0.02 mm (0.0079") at 28 days as measured by the Chaplin Abrasion Test in conformance with British Standard 8204.

Products: Subject to compliance with requirements, provide one of the following:

"Thin-Top Supreme"	Euclid Chemical Co.
"Tammspatch II"	Euclid Chemical Co.

## 2.5 PROPORTIONING AND DESIGN OF MIXES

A. Preparation of Design Mixes:

1. 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 318-08. Submit mix designs for each class of concrete for review and approval.
2. If mix designs based on field experience 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, mix designs shall be prepared by an independent testing laboratory and shall achieve an average compressive strength 1200 psi higher than the specified  $f_c$  for strengths up to 5000 psi at 28 days.
4. The proposed mix designs shall be accompanied by complete standard deviation

analysis or trial mixture test data.

5. The testing facility shall not be the same as used for field quality control testing.
- B. Submit written reports of each proposed mix for each class of concrete at least 15 days prior to start of work on the Mix Design Submittal Form included at the end of this specification. Do not begin concrete production until mixes have been reviewed and approved.  
 The contractor shall be responsible for, and bear all costs associated with the filing and securing of approvals, if any, for Form TR3: Technical Report Concrete Design Mix, including, but not limited to, engaging the services of a New York City licensed Concrete Testing Lab for the review and approval of concrete design mix, testing, signatures and professional seals, etc., compliant with NYC Department of Buildings requirements, for each concrete design mix.
- 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. Laboratory test data for revised mix design and strength results shall be submitted a before using in work.
- D. Admixtures: Provide admixtures in concrete mix designs as follows:
1. Water-reducing admixture or high-range water-reducing admixture (superplasticizer) in all concrete as needed for placement and workability.
  2. Non-corrosive, non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).
  3. High-range water-reducing admixture (superplasticizer) in pumped concrete, concrete for industrial slabs, architectural concrete, parking structure slabs, fiber-reinforced slabs, concrete required to be watertight, self-consolidating concrete, concrete with an ultimate strength of 5,000 psi or more and concrete with water/cementitious-material ratios less than 0.50.
  4. 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 as follows with a tolerance of plus-or-minus 1.5 percent:

- a. Concrete structures and slabs exposed to freezing and thawing, de-icing chemicals or subjected to hydraulic pressure:

Maximum Aggregate Size	Moderate Exposure	Severe Exposure
1 1/2"	4.5 percent	5.5 percent
1"	4.5 percent	6.0 percent
3/4"	5.0 percent	6.0 percent
1/2"	5.5 percent	7.0 percent

- b. Other Concrete: (not exposed to freezing and thawing, de-icing chemicals)

or hydraulic pressure): 2.0 percent to 4.0 percent air.

- c. Troweled interior slabs (except lightweight concrete): 3.0 percent, maximum.
  - 5. Use admixtures for water reduction and set control in strict compliance with manufacturer's directions.
  - 6. Corrosion inhibiting admixture, where indicated on Drawings, at a dosage of 3 gal./cu. yd., unless otherwise noted.
- E. Water-Cementitious-Materials (W/C) Ratio: Limit W/C in concrete as follows:
- 1. Concrete exposed to freezing and thawing: 0.50, maximum.
  - 2. Concrete exposed to de-icing chemicals and/or watertight concrete: 0.40, maximum.
  - 3. Concrete exposed to brackish water, salt spray or de-icing chemical: 0.35, maximum.
  - 4. Troweled interior slabs subject to vehicular traffic: 0.53, maximum.
- F. Slump and Sump Flow Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
- 1. Ramp slabs and sloping surfaces: Not greater than 3".
  - 2. Reinforced foundation systems: Not less than 1" nor greater than 3".
  - 3. Concrete containing high-range water-reducing admixture (superplasticizer): Not greater than 9", unless otherwise approved. All concrete shall arrive at the job site with a slump of 2" to 3" (3" to 4" for lightweight concrete or concrete receiving a "shake-on" hardener). After verification of initial slump, superplasticizer may be added to increase the slump to the approved level.
  - 4. Other concrete: Not less than 1" nor greater than 4".
- G. Chloride Ion Level: Chloride ion content of aggregate shall be tested by the laboratory designing the trial mixes. The total chloride ion content of the mix including all constituents shall not exceed the limitations set forth in Table 4.5.4 of ACI 318-08 for concrete subjected to de-icing chemicals or exposed to chloride in service (0.15 chloride ions by weight of cement).

## 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 deg F (30 deg C) and 90 deg F (32 deg C), reduce maximum mixing and delivery time from 1 1/2 hours to 75 minutes and when air temperature is above 90 deg F (32 deg C), reduce maximum mixing and delivery time to 60 minutes.
- D. After mixing, no water shall be added to concrete containing high-range water-reducing admixture (superplasticizer). If loss of slump occurs, superplasticizer may be re-dosed at the site as long as a "flash set" has not occurred.

### 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 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 that concrete members and structures are of correct size, shape, alignment, elevation and position. Maintain formwork construction tolerances complying with ACI 347 and ACI 117.
- B. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- C. Construct forms to sizes, shapes, lines and dimensions shown and to obtain accurate alignment, location, grades and 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.
- 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, reglets, 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 or cement paste. Locate temporary openings on forms at inconspicuous locations.
- F. 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.

- G. **Cleaning and Tightening:** Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt and other debris just before concrete is placed. Re-tighten forms and bracing after concrete placement to eliminate leakage and maintain proper alignment.

### 3.3 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 and construction or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.
- D. Place reinforcement to obtain minimum coverage 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. **Synthetic Structural Macro Fibers:** All non-reinforced concrete slabs, toppings and concrete fill on metal deck shall contain the specified fibers. Fibers shall be 2" in length and used at a dosage of 4 lbs. per cu. yd., unless otherwise indicated on the plans.

### 3.4 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 Architect. Submit proposed joint locations for review and approval.
- B. Provide keyways at least 1 1/2" deep in construction joints in walls and slabs and between walls and footings.
  - 1. 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 or other tools.

- E. Contraction (Control) Joints in Slabs-on-Ground: Maximum joint spacing shall be 36 times the slab thickness unless otherwise noted on the drawings.
  - 1. A dry cut saw shall be used immediately after final finishing and to a depth of 1 1/4".
  - 2. A conventional saw shall be used as soon as possible without dislodging aggregate and to a depth of one quarter of the slab thickness.
  - 3. No sawcutting shall be performed after concrete has set.
  - 4. Joint filler and sealant materials are specified in Division 7.

### 3.5 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.
  - 1. Use setting drawings, diagrams, instructions and directions provided by suppliers of embedded items.
  - 2. The most stringent tolerance of suppliers providing embedded items shall govern.
- B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete at exterior walls and where flashing is shown at lintels, relieving angles and other conditions.
- C. 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.

### 3.6 PREPARATION OF FORM SURFACES

- A. Clean re-used forms of concrete residue and 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 in conformance with 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 forms

against rusting. Rust-stained steel formwork is not acceptable and shall not be used.

### 3.7 CONCRETE PLACEMENT

- A. **Pre-placement Inspection:** Before placing concrete, complete, inspect and survey formwork installation, reinforcing steel and items to be embedded or cast into concrete. Notify other trades to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form-coating compounds are not used.
  - 1. Apply temporary protective covering to lower two feet of finished walls adjacent to concrete floor slabs to be placed and similar conditions and guard against spattering during placement.
- B. **Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.**
  - 1. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness.
  - 2. If a section cannot be placed continuously, provide construction joints as herein specified.
  - 3. Deposit concrete as nearly as practicable to its final location to avoid segregation.
- C. **Placing Concrete in Forms:** Deposit concrete in forms in horizontal layers not deeper than 24" 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. Consolidate placed concrete using mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
- D. **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.
- E. **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.
- F. **Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.**
- G. **Bring slab surfaces to correct level with straightedge and strike-off.** Use highway straightedge, bull floats or darbies to create a smooth surface, free of humps or hollows.

Do not disturb slab surfaces prior to beginning finishing operations.

- H. Maintain reinforcement in proper position during concrete placement operations.
  - I. Submit for review and approval saw-cut plans and/or plans showing the limits of each concrete placement.
  - J. Cold Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing action 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 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
    - 2. Do not use frozen materials or materials containing ice or snow.
    - 3. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
    - 4. When needed, use only a non-corrosive, non-chloride accelerator. Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions are not permitted.
  - K. Hot Weather Placement: When hot weather conditions exist that could 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 deg F (32 deg C). Mixing water may be chilled; chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is at Contractor's option.
    - 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 needed due to high temperatures, low humidity and/or other adverse placing conditions.
- 3.8 FINISH OF FORMED SURFACES
- A. Rough-Formed Finish: For formed concrete surfaces not exposed to view when the work is complete, unless otherwise indicated. Concrete surface shall have texture imparted by form facing material; tie holes and defective areas shall be repaired and patched and fins and other projections exceeding 1/4" in height shall be rubbed down or chipped off.

- B. **Smooth-Formed Finish:** For formed concrete surfaces exposed to view when the work is complete or that will be covered with a coating material applied directly to concrete, such as waterproofing, dampproofing, painting or other similar system. Concrete surface shall have texture imparted by selected form facing material, arranged orderly and symmetrically with a minimum of seams; tie holes and defective areas shall be repaired and patched and fins and other projections shall be completely removed and smoothed.
- C. **Related Unformed Surfaces:** At tops of walls, horizontal offsets and similar unformed surfaces that are adjacent to formed surfaces, strike off smooth and finish with a texture that matches adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.9 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 retarder shall be as specified in "RELATED MATERIALS" above.
- B. **Compatibility:** All curing/sealing compounds and curing/sealing methods shall be compatible with the architectural finishes the concrete surfaces are designed to receive and the procedures to attain those architectural finishes.
- C. **Curing Methods:** Perform curing of concrete by one of the methods below or combinations thereof.
  - 1. **Moisture Curing:** Keep concrete surfaces continuously wet using one of the following:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. **Absorptive Cover:** Cover concrete surfaces with specified absorptive cover. Thoroughly saturate cover with water and keep continuously wet. Place absorptive cover to provide complete coverage of concrete surfaces and edges with 12" lap over adjacent absorptive covers.
  - 2. **Moisture-Retaining-Cover Curing:** Cover concrete surfaces with moisture-retaining cover for curing concrete. Place cover in widest practicable widths with sides and ends lapped at least 12" and sealed by waterproof tape or adhesive.

Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Mist concrete surfaces with water. Apply clear curing and sealing compound or strippable curing compound uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Re-coat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
  - a. Use the specified clear curing and sealing compound for all exposed troweled interior slabs not receiving a penetrating liquid densifier or "dry shake" hardener, exterior slabs, sidewalks, curbs and architectural concrete not receiving a penetrating sealer. Maximum coverage shall be 400 sq. ft./gallon on steel troweled surfaces and 300 sq. ft./gallon on floated or broomed surfaces.
  - b. Use the specified strippable curing compound on surfaces to be covered with finishes or coating material applied directly to the concrete, such as liquid densifier/sealer, waterproofing, dampproofing, membrane roofing, flooring, painting and other similar materials. Apply in accordance with manufacturer's instructions.

- D. 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.
- E. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor toppings and other horizontal surfaces by application of the specified curing compound or a continuous moist curing method approved by the Architect.

### 3.10 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 deg F (10 deg 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 sooner than 14 days after concrete placement and until concrete has attained its specified 28-day compressive strength. Determine potential compressive strength of in-place concrete by testing field-cured specimens that are representative of concrete locations or members.
- C. Form-facing material may be removed four days after concrete placement but only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

### 3.11 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 joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces.

### 3.12 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 templates at correct elevations and in compliance with certified diagrams or templates of manufacturers furnishing machines and equipment.
- D. Base Plates: Grout base plates and foundations as indicated, using specified non-shrink non-metallic grout.
  - 1. Where high fluidity and/or increased placing time is required, use the specified high-flow grout. This grout shall be used for all base plates larger than 6 sq. ft.
- 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. Screed, tamp, and finish concrete surfaces as scheduled.

### 3.13 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms.
  - 1. Cut out honeycombs, 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.
  - 2. Thoroughly clean, dampen with water, and brush-coat the area to be patched with an approved bonding grout containing the specified bonding admixture.
  - 3. Place patching mortar while the bonding grout is still tacky.
- B. Surfaces Exposed To View:
  - 1. Blend white Portland cement and standard Portland cement so that, when dry,

patching mortar will match color of surrounding concrete. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching.

2. Compact mortar in place and strike off slightly higher than surrounding surface.

C. Repair of Formed Surfaces:

1. Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections and stains and other discolorations that cannot be removed by cleaning.
2. Flush out form tie holes, fill with dry pack mortar, or precast 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:

1. 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 trueness of slope and smoothness using a template having required slope.
2. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects include crazing, cracks wider than 0.01" or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycombs, rock pockets and other objectionable conditions.
3. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
4. 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.

F. Repair of Defective Areas:

1. Repair isolated random cracks and single holes not over 1" in diameter by the dry-pack method:
  - a. Groove top of cracks and cut out holes to sound concrete; clean of dust, dirt and loose particles.
  - b. Dampen cleaned concrete surfaces and apply bonding compound.
  - c. Mix dry-pack consisting of two parts Portland cement to five parts fine aggregate passing a No. 16 mesh sieve and using only enough water as needed for handling and placing.



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- d. Place dry-pack after bonding compound has dried.
  - e. Compact dry-pack mixture in place and finish to match adjacent concrete.
  - f. Keep patched area continuously moist for not less than 72 hours.
2. Repair other defective areas by cutting out and replacing with fresh concrete:
- a. Remove defective areas to sound concrete with clean, square cuts; expose reinforcing steel with at least 3/4" clearance all around.
  - b. Dampen concrete surfaces in contact with patching concrete and apply bonding compound.
  - c. Mix patching concrete of same materials to provide concrete of same type or class as original concrete.
  - d. Place, compact and finish to blend with adjacent finished concrete.
  - e. Cure in the same manner as adjacent concrete.
- G. Structural Repairs: All structural repairs shall be made with prior approval of the Engineer as to method and procedure using the specified low-shrinkage repair mortar or specified epoxy adhesive. Where epoxy injection procedures must be used, an approved low-viscosity epoxy shall be used.
- 1. All garage slabs shall be repaired prior to the slab being treated with the specified penetrating anti-spalling sealer. In addition, all cracks shall be filled with the specified crack sealer.
- H. 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.
- I. All exposed floors shall be leveled, where required, with the specified self-leveling repair topping.
- J. Repair Methods not specified above may be used, as approved.
- 3.14 WORK IN CONNECTION WITH OTHER TRADES AND CONTRACTS
- A. Install sleeves, pockets, openings, etc., in concrete walls, beams slabs or other concrete elements as needed for mechanical and other trades; these items 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 drawings or as directed by the Construction Manager.
  - C. Leave temporary access panels, where needed, 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 for approval.
- 3.15 CUTTING AND PATCHING
- A. Concrete contractor shall be responsible for all cutting, removing and patching work

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where concrete surfaces are not installed within the limits shown on the drawings or specified herein.

- B. Where cutting and patching is required to accommodate the work of other contractors, such cutting shall be done at the expense of said contractors but shall be performed by the concrete contractor.

### 3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION

The City of New York performs all Special Inspections.

END OF SECTION 03 30 00

**SECTION 03 48 13 – BOLLARDS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION OF WORK**

- A. Work shall consist of the furnishing and installation of bollards as may be required or designated on the Contract Drawings.

**1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 32 12 16 – Asphalt Concrete Paving

**1.3 SUBMITTALS**

- A. Contractor to provide Manufacturer's catalog cut for bollards and all accessories, with printed specifications and installation instructions to the Commissioner.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Stationary Embedded Bollards:

- 1. Bollards shall be 8-inch diameter standard weight steel pipe. Bollards shall have a height of 4-feet above grade. Bollards shall be supplied in colors as specified on the Contract Drawings.

- B. Polyethylene Bollard Covers

- 1. Large polyethylene post guard covers with an inside diameter of 8 7/8 inches and 72 inches in height. Wall thickness shall be 1/8-inch minimum, with ultraviolet stabilizer and durable for all weather conditions. Bollard covers shall be as manufactured by Encore Commercial Products, Inc., Eagle Manufacturing Company, Ideal Shield, or approved equal. Bollard covers shall be supplied in colors as specified on Contract Drawings.

**PART 3 - EXECUTION**

**3.1 STATIONARY EMBEDDED BOLLARD INSTALLATION**

- A. Existing Concrete/Asphalt Surface Installation

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1. Installation by core drilling into existing concrete/asphalt surface.
  2. When using the core drill method use a core drill slightly larger than the removable pipe bollard insert.
- B. New Concrete Surface Installation
- C. When using a new footing set the removable pipe bollard inserts into concrete as it is poured, or pre-set the insert in desired locations.

3.2 BOLLARD COVER INSTALLATION

- A. Crisscross the two foam strips over the top of the bollard you intend to cover with the post guard. When the strips hang over the top of the bollard, the ends should be equal with each other.
- B. Slide the post guard over the bollard to check the fit.
- C. Remove the post guard after checking the fit. If necessary, cut the post guard to the necessary length.
- D. Spray one side of the foam strips with an adhesive spray. Crisscross the foam strips, with the sticky side down, over the top of the bollard and press the strips into place. Be sure the ends of the foam strips adhere to the Bollard.
- E. Spray both foam strips (facing up) with adhesive spray.
- F. Slide the post guard over the bollard with the foam tape.

END OF SECTION 03 48 13

SECTION 04 22 00 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Concrete masonry units.
  - 2. Mortar and grout.
  - 3. Steel reinforcing bars.
  - 4. Masonry joint reinforcement.
  - 5. Ties and anchors.
  - 6. Miscellaneous masonry accessories.
  - 7. Masonry-cell insulation.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
  - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Material Certificates: For each type and size of the following:
  - 1. Masonry units. Include data on material properties.
  - 2. Cementitious materials. Include brand, type, and name of manufacturer.
  - 3. Grout mixes. Include description of type and proportions of ingredients.

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4. Reinforcing bars.
5. Joint reinforcement.
6. Anchors, ties, and metal accessories.

C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

D. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

## 1.6 QUALITY ASSURANCE

A. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

B. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

C. Preinstallation Conference: Conduct conference at Project site.

## 1.7 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

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1.8 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.
- B. 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.
- C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
  - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.
- B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

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1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners.

B. CMUs: ASTM C 90.

1. Density Classification: Lightweight or medium weight.
2. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

## 2.3 CONCRETE AND MASONRY LINTELS

A. General: Provide one of the following.

B. Concrete Lintels: ASTM C 1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than CMUs.

C. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Division 03 Section "Cast-in-Place Concrete," and with reinforcing bars indicated.

## 2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C 207, Type S.

C. Masonry cement will not be accepted. Mortar cement will not be accepted.

D. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

E. Aggregate for Grout: ASTM C 404.

F. Water: Potable.

## 2.5 REINFORCEMENT

A. Recycled Materials: Use reinforcing bars with a minimum 95% postconsumer recycled content.



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- B. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
  
- C. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.
  - 1. Material and finish: Hot-dip galvanized, carbon steel.
  - 2. Wire Size for Side Rods: 0.148-inch (9 gage) diameter.
  - 3. Wire Size for Cross Rods: 0.148-inch (9 gage) diameter.
  - 4. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
  - 5. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
  
- D. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.

## 2.6 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
  - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
  - 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
  - 3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
  
- B. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
  - 1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- diameter, hot-dip galvanized steel wire.
  - 2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.187-inch- diameter, hot-dip galvanized steel wire.
  
- C. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
  - 1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.060-inch- thick, steel sheet, galvanized after fabrication.
  - 2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.187-inch- diameter, hot-dip galvanized steel wire.
  
- D. Partition Top anchors: 0.105-inch- thick metal plate with 3/8-inch- diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
    - b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
    - c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
    - d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

2.8 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  - 1. Do not use calcium chloride in mortar or grout.
  - 2. Use portland cement-lime mortar.
- B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated.
  - 1. Use Type S mortar for all locations.
- C. Grout for Unit Masonry: Comply with ASTM C 476.
  - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
  - 2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
  - 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
  - 2. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
  - 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
  - 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
  - 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
  - 1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
  - 2. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.

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3. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.

C. Joints:

1. For 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.
2. Head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4-inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- G. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- H. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
  1. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
  2. Treat joint between top of partition and underside of structure above to comply with Division 07 Section "Fire-Resistive Joint Systems."

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3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
  2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
  3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
  4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.6 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
1. Space reinforcement not more than 16 inches o.c.
  2. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Provide continuity at wall intersections by using prefabricated T-shaped units.
- C. Provide continuity at corners by using prefabricated L-shaped units.

3.7 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete where masonry abuts or faces structural steel or concrete to comply with the following:
1. Anchor masonry with anchors embedded in masonry joints and attached to structure.
  2. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally.

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3.8 LINTELS

- A. Provide concrete or masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
- B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.9 REINFORCED UNIT MASONRY INSTALLATION

- A. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
  - 1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  - 2. Limit height of vertical grout pours to not more than 60 inches.

3.10 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Commissioner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to meet specified requirements shall be done at Contractor's expense.
- B. Inspections: Level 2 special inspections according to the "New York City Building Code."
  - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
  - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement. Provide continuous inspection during grouting.
  - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
- G. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for mortar air content and compressive strength.

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- H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Commissioner's approval of sample cleaning before proceeding with cleaning of masonry.
  3. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.12 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 042200

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## SECTION 05 12 00 — STRUCTURAL STEEL

### PART 1 — GENERAL

#### 1.1 GENERAL

- A. Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- B. Use resources and energy to the fullest extent possible in the completion of the project. Resource-efficient aspects to be considered in completing this project include use of techniques that minimize waste generation, re-use of materials, on-site where possible, and recycling of waste generated during the construction process.
- C. In the selection of the products and materials of this section, 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. Does not contain methylene-chloride.
  - 10. Does not contain chlorinated hydrocarbons.
  - 11. Contains the greatest extent possible of post-consumer or post-industrial waste.

#### 1.2 DESCRIPTION OF WORK

- A. Extent of structural steel work is shown on drawings, including schedules, notes and details to show size and location of members, typical connections, and type of steel required.
- B. Structural steel is that work defined in American Institute of Steel Construction (AISC) "Code of Standard Practice" and as otherwise shown on drawings.
- C. Related Work Specified in Other Sections:
  - 1. Cast-in-place Concrete is specified in Section 03 30 00.

### 1.3 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

### 1.4 SUBMITTALS

- A. Product Data: Submit producer's or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
1. Structural steel (each type), including certified copies of mill reports covering chemical and physical properties.
  2. High-strength bolts (each type), including nuts and washers.
  3. Direct tension indicators.
  4. Shear stud connectors.
  5. Shop primers
  6. Shrinkage-resistant grout.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- C. Welding Certificates.
- D. Source Quality Control Reports.
- E. Shop Drawings:
1. No work may commence until all relevant shop drawings have been reviewed and final "Approval with no exceptions" has been granted.
  2. Submit shop drawings prepared under supervision of a registered professional engineer, including complete details and schedules for fabrication and assembly of structural steel members, procedures and diagrams.
    - a. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
    - b. Include embedment drawings.
    - c. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
    - d. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pre-tensioned and slip-critical high-strength bolted connections.
    - e. Identify members and connections of the seismic-load-resisting system.
    - f. Indicate locations and dimensions of protected zones.
    - g. Identify demand critical welds.
    - h. For structural steel connections indicated to comply with design

loads, include structural design data signed and sealed by the qualified professional engineer responsible for their preparation.

- i. Provide setting drawings, templates, and direct installation of anchor bolts, embeds and other anchorages to be installed as work of this section.
- F. **Test Reports:** Submit copies of reports of tests conducted on shop and field bolted and weld connections. Include data on type(s) of tests conducted and test results.
- G. **Surveys:** Submit certified copies of each survey conducted by a licensed Surveyor and showing elevations and locations of base plates, embeds and anchor bolts to receive structural steel and final elevations and locations for major members. Indicate discrepancies between actual installation and contract documents.

#### 1.5 QUALITY ASSURANCE

- A. **Codes and Standards:** Comply with provisions of following, except as otherwise indicated:

1. Building Code: New York City Building Code 2008.
2. American Institute of Steel Construction (AISC) Code of Standard Practice for Steel Buildings and Bridges. Paragraph 4.2.1 of the above code is hereby modified by deletion of the following sentence: "This approval constitutes the owner's acceptance of all responsibility for the design adequacy of any connections designed by the fabricator as a part of his preparation of these shop drawings".
3. AISC Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings, including the Commentary and Supplements thereto as issued.
4. AISC Specifications for Architecturally Exposed Structural Steel.
5. AISC Specifications for Structural Joints using ASTM A 325 or A 490 Bolts approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.
6. American Welding Society (AWS) D1.1 Structural Welding Code - Steel.
7. ASTM A 6 General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use.

- B. **Qualifications for Welding Work:**

1. Qualify welding processes and welding operators in accordance with AWS "Qualification" procedure.
2. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests. If recertification of welders is required, retesting will be Contractor's responsibility.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site at such intervals to insure uninterrupted progress of work.

- B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not 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. If bolts and/or nuts become dry or rusty, clean and re-lubricate before use. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.
- D. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.
- E. Painted members shall be protected to minimize damage by use of nylon slings or other means.

#### 1.7 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

### PART 2 — PRODUCTS

#### 2.1 MATERIALS

- A. W Shapes: ASTM A 992, ASTM A 572, Grade 50, ASTM A 529, Grade 50 or ASTM A 913, Grade 50.
- B. Channels, Angles, M and S shapes: ASTM A 572, Grade 50, ASTM A 529, Grade 50 or ASTM A 913, Grade 50.
- C. Plates and Bars: ASTM A 36 (as noted on the drawings) or ASTM A 572, Grade 50.
- D. Corrosion-Resisting Structural-Steel Shapes, Plates, and Bars: ASTM A 588, Grade 50.
- E. Welding Electrodes: Comply with AWS requirements.

#### 2.2 BOLTS, CONNECTORS AND ANCHORS

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- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.
  - 1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.
- B. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers with plain finish.
  - 1. Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type with plain finish.
- C. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers.
  - 1. Finish: Hot-dip zinc coating.
  - 2. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with [mechanically deposited zinc coating finish.
- D. Un-headed Anchor Rods: ASTM F 1554, Grade 55.
  - 1. Configuration: Straight with a bottom plate with double-nut and washer assembly.
  - 2. Nuts: ASTM A 563 heavy hex carbon steel.
  - 3. Plate Washers: ASTM A 36 carbon steel.
  - 4. Washers: ASTM F 436, Type 1, hardened carbon steel.
- E. Headed Anchor Rods: ASTM F 1554, Grade 55, weldable, straight.
  - 1. Nuts: ASTM A 563 hex carbon steel.
  - 2. Plate Washers: ASTM A 36 carbon steel.
  - 3. Washers: ASTM F 436, Type 1, hardened carbon steel.
- F. Threaded Rods: A 572, Grade 50.
  - 1. Nuts: ASTM A 563 heavy hex carbon steel.
  - 2. Washers: ASTM F 436, Type 1, hardened.
  - 3. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
- G. Sleeve Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1018.
- H. Electrodes for Welding: Comply with AWS Code.

2.3 STRUCTURAL STEEL PAINT

- A. Exterior Exposed Structural Steel:

1. Surface Preparation:  
SSPC-SP6 – Commercial Blast Cleaning.
2. Primer:
  - a. Carboline Carbozinc 858/859 organic zinc-rich primer @ 3.0-5.0mils d.f.t.
  - b. Tnemec 594 organic zinc-rich primer @ 3.0-5.0mils d.f.t.
  - c. Dupont 347/937 organic zinc-rich primer @ 3.0-5.0mils d.f.t.
  - d. Sherwin Williams Zinc Clad III organic Zinc rich primer @ 3.0-5.0mils d.f.t.
  - e. Sherwin Williams Recoatable Epoxy @ 4.0-6.0mils d.f.t.
3. Intermediate:
  - a. Carboline Carboguard 888/893 @ 3.0-5.0mils d.f.t.
  - b. Tnemec Epoxoline 66/27 FC Typoxy @ 3.0-5.0mils d.f.t.
  - c. Dupont 25 P @ 3.0-5.0 mils d.f.t.
  - d. Sherwin Williams Recoatable Epoxy or Epolon II Multi mil @ 3.0-5.0mils d.f.t.
4. Finish:
  - a. Carboline Carbothane 133HB @ 3.0-5.0mils d.f.t.
  - b. Tnemec Endurashield 73 @ 3.0-5.0mils d.f.t.
  - c. Dupont Imron 326 @ 3.0-5.0mils d.f.t.
  - d. Sherwin Williams Acrolon Multi mil or 218 HS Series @ 3.0-5.0mils d.f.t.

B. Interior Exposed Structural Steel:

1. Surface Preparation:  
SSPC-SP3 – Power Tool Cleaning.
2. Primer:
  - a. Carboline Carbocoat 150 Multibond @ 2.0-3.0mils d.f.t.
  - b. Tnemec Series 37H Chem-Prime/27 Typoxy @ 3.0-5.0mils d.f.t.
  - c. Dupont 25P @ 3.0-5.0mils d.f.t.
  - d. Sherwin Williams Macro Poxxy646 @ 3.0-5.0mils d.f.t.
3. Intermediate Coat:
  - a. Carboline Carboguard 888/893 @ 2.0-4.0mils d.f.t.
  - b. Tnemec Epoxoline 66/27 FC Typoxy @ 2.0-4.0mils d.f.t.
  - c. Dupont 25 P @ 2.0-4.0 mils d.f.t.
  - d. Sherwin Williams Macro Poxxy 646 @ 3.0-2.0-4.0mils d.f.t.
4. Finish:
  - a. Carboline Carbothane 133HB @ 3.0-5.0 mils d.f.t.
  - b. Tnemec Endurashield 73 @ 3.0-5.0 mils d.f.t.
  - c. Dupont Imron 226 @ 3.0-5.0 mils d.f.t.
  - d. Sherwin Williams Acrolon Milti-Mil or 218 HS Series@ 3.0-5.0 mils d.f.t.

C. Steel Dunnage (where color not critical):

1. Surface Preparation:  
SSPC-SP3 – Power Tool Cleaning.
2. Prime/Finish:
  - a. Two coats Carbomastic 15 L.O. / 242 @ 4.0-5.0 mils d.f.t./ct.

- b. Two coats Tnemec 135/394 @ 3-5 mils d.f.t./ct.

D. Steel Dunnage (where color indicated by Architect or other design professional):

1. Surface Preparation:  
SSPC-SP3 – Power Tool Cleaning.
2. Primer:
  - a. Carboline Carbomastic 15 L.O./242 @ 4.0-6.0 mils d.f.t.
  - b. Sherwin Williams Macropoxy 646 or Duraplate 235 @ 4.0-6.0 mils d.f.t.
  - c. Tnemec: 135/394 @ 3-4 mils d.f.t.
3. Intermediate/Finish:
  - a. Two coats of Carbothane 133 HB @ 2.0-3.0 mils d.f.t. per coat.
  - b. Tnemec Epoxoline 66/27FC Typoxy @ 2.0-4.0 mils d.f.t.
  - c. Dupont 25 P @ 2.0-4.0 mils d.f.t.
  - d. Sherwin Williams Macropoxy 646 or Epolon II Multimil Series @ 2.0-4.0 mils d.f.t.
4. Finish:
  - a. Carboline Carbothane 133HB @ 3.0-5.0 mils d.f.t.
  - b. Tnemec Endurashield 73 @ 3.0-5.0 mils d.f.t.
  - c. Dupont Imron 226 @ 3.0-5.0 mils d.f.t.
  - d. Sherwin Williams Acrolon Multimil or 218 HS Series @ 4.0-6.0 mils d.f.t.

E. Steel in Corrosive Environment to be Fire-proofed:

1. Surface Preparation:  
SSPC-SP3 – Power Tool Cleaning.
2. Shop Coat:
  - a. Carboline Rustbond Penetrating Sealer @ 1.5-3.0 mils d.f.t.
  - b. Tnemec 135 Chembuild @ 4-6 mils d.f.t.

2.4 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes by plugging with zinc solder and filing off smooth.
  2. Galvanize lintels and shelf angles attached to structural-steel frame and located in exterior walls.

2.5 GROUT

- A. Metallic Shrinkage Resistant Grout: ASTM C 1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

Products: Subject to compliance with requirements, provide one of the following:

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"Firmix"	Euclid Chemical Co.
"Embeco 153"	Master Builders
"Ferrolith G"	Sonneborn/Contech
"Irontox"	Toch Brothers
"Kemox C"	Sika Chemical
"Vibra-Foil"	W. R. Grace

- B. Non-metallic Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

Products: Subject to compliance with requirements, provide one of the following:

"Euco N.S."	Euclid Chemical Co.
"Masterflow 713"	Master Builders
"Five Star Grout"	U.S. Grout Corp.

## 2.6 FABRICATION

- A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with the AISC "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360 and as indicated on final shop drawings.
1. Camber structural-steel members where indicated.
  2. Fabricate beams with rolling camber up.
  3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
  4. Mark and match-mark materials for field assembly.
  5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.
- C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements of AWS D1.1/D1.1M.
- D. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- E. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- F. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP1- Solvent cleaning.
- G. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at site



whenever possible without causing delay in the work. Promptly notify Architect whenever design of members and connections for any portion of structure are not clearly indicated.

H. Connections:

1. Weld or bolt shop connections, as indicated.
2. Bolt field connections, except where welded connections or other connections are indicated.
3. Provide high-strength threaded fasteners for principal bolted connections, except where unfinished bolts are indicated.
4. Provide unfinished threaded fasteners for only bolted connections of secondary framing members to primary members (including purlins, girts, and other framing members taking only nominal stresses) and for temporary bracing to facilitate erection.

I. High-Strength Bolted Construction: Install high-strength threaded fasteners in accordance with Research Council on Structural Connections "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts". Install with Direct Tension Indicators. Unless otherwise noted on the Drawings, all high-strength bolted connections shall be slip critical type.

J. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds and methods used in correcting welding work. Assemble and weld built-up sections by methods which will produce true alignment of axes without warp.

K. Holes for Other Work:

1. Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.
2. Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.

## 2.7 SHOP PAINTING

A. General:

1. Shop paint structural steel, except those members or portions of members to be embedded in concrete or mortar. Paint embedded steel which is partially exposed on exposed portions and initial 2" of embedded areas only.
2. Do not paint surfaces which are to be welded or high-strength bolted with friction-type connections, except paint certified for slip critical service.
3. Do not paint surfaces which are scheduled to receive sprayed-on fireproofing.
4. Apply 2 coats of paint to surfaces which are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

- B. **Surface Preparation:** After inspection and before shipping, clean steelwork to be painted. Remove loose rust, loose mill scale and spatter, slag or flux deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC) methods as follows:
  - SP2 – Hand Tool Cleaning: Steel to be fire proofed.
  - SP3 – Power Tool Cleaning: Interior exposed steel and exterior exposed steel.
  - SP6 – Commercial Blast Cleaning: Exterior exposed steel and interior steel in aggressive environments (swimming pools, etc.) or architecturally exposed steel.
  
- C. **Painting:** Within no more than six hours of surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide dry film thickness specified. Use painting methods which result in full coverage of joints, corners, edges and exposed surfaces.

### **PART 3 — EXECUTION**

#### **3.1 EXAMINATION**

- A. **Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates and other embedded items, with steel erector present, for compliance with requirements.**
  
- B. **Proceed with installation only after all unsatisfactory conditions have been corrected.**

#### **3.2 ERECTION**

- A. **Surveys:** Employ a licensed Land Surveyor for accurate erection of structural steel. Check elevations of concrete and masonry bearing surfaces and locations of anchor bolts and similar devices before erection work proceeds and report discrepancies to Architect. Do not proceed with erection until corrections have been made or until compensating adjustments to structural steel work have been agreed upon with Architect.
  
- B. **Temporary Shoring and Bracing:** Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.
  
- C. **Temporary Planking:** Provide temporary planking and working platforms as necessary to effectively complete work.
  
- D. **Setting Bases and Bearing Plates:**

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1. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates.
  2. Set loose and attached base plates and bearing plates for structural members on wedges or other adjustable devices.
- E. Anchor Rods:
1. Furnish anchor rods and other connectors required for securing structural steel to foundations and other in-place work.
  2. Furnish templates and other devices as necessary for pre-setting rods and other anchors to accurate locations.
  3. Refer to Division 3 of these specifications for anchor rod installation requirements in concrete.
- F. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or bearing plate prior to packing with grout. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow grout to cure.
- G. Field Assembly:
1. Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming a part of a complete frame or structure before permanently fastening.
  2. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly.
  3. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
  4. Level and plumb individual members of structure within specified AISC tolerances.
  5. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
  6. Splice members only where indicated and accepted on shop drawings.
- H. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.
- I. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment and removal of paint on surfaces adjacent to field welds.
- J. Do not enlarge unfair holes in members by burning or by use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.
- K. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members which are not under stress. Finish gas-cut sections to achieve a sheared appearance when permitted.

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### 3.3 REPAIRS AND PROTECTION

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.
- B. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections and damaged areas of shop paint to the standards for shop-cleaned steel. Apply paint to cleaned areas using same material as used for shop painting to same dry film thickness.

### 3.4 QUALITY CONTROL

The City of New York performs all Special Inspections.

END OF SECTION 05 12 00

## SECTION 071326 - SELF-ADHERING SHEET WATERPROOFING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. WP-1: Modified bituminous sheet waterproofing.
  - 2. WP-2: Adhesive-coated HDPE sheet waterproofing.
  - 3. Vapor Barrier.
  - 4. Insulation.
- B. Related Sections include the following:
  - 1. Division 07 Section "Joint Sealants" for joint-sealant materials and installation.

#### 1.3 SUBMITTALS

- A. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.
- B. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.
- C. Samples: For the following products:
  - 1. 12-by-12-inch (300-by-300-mm) square of waterproofing and flashing sheet.
  - 2. 12-by-12-inch (300-by-300-mm) square of insulation.
- D. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.
- E. Qualification Data: For Installer.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for waterproofing.

- G. Warranties: Special warranties specified in this Section.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that is acceptable to waterproofing manufacturer for installation of waterproofing required for this Project.
- B. Source Limitations: Obtain waterproofing materials, protection course, through one source from a single manufacturer.
- C. Mockups: Before beginning installation, install waterproofing to 100 sq. ft. (9.3 sq. m) of wall to demonstrate surface preparation, crack and joint treatment, corner treatment, and execution quality.
  - 1. If Architect determines mockups do not comply with requirements, reapply waterproofing and reinstall overlying construction until mockups are approved.
  - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver liquid materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by waterproofing manufacturer.
- C. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- D. Store rolls according to manufacturer's written instructions.
- E. Protect stored materials from direct sunlight.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
  - 1. Do not apply waterproofing in snow, rain, fog, or mist.

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- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

## 1.7 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to replace waterproofing material that does not comply with requirements or that fails to remain watertight within specified warranty period.
  - 1. Warranty does not include failure of waterproofing due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in substrate exceeding 1/16 inch (1.6 mm) in width.
  - 2. Warranty Period: Five (5) years from date of Substantial Completion.
- B. Special Installer's Warranty: Specified form, on warranty form, signed by Installer, covering Work of this Section, for warranty period of two (2) years.
  - 1. Warranty includes removing and reinstalling protection board, drainage panels, insulation, pedestals, and pavers on plaza decks.

## PART 2 - PRODUCTS

### 2.1 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet: Not less than 60-mil- (1.5-mm-) thick, self-adhering sheet consisting of 56 mils (1.4 mm) of rubberized asphalt laminated to a 4-mil- (0.10-mm-) thick, polyethylene film with release liner on adhesive side and formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.
  - 1. Basis of Design Product: Subject to compliance with requirements, other products that may be incorporated into the Work include, but are not limited to, the following basis of design product:
    - a. Grace, W. R. & Co.; Bituthene 4000.
    - b. Carlisle
    - c. Georgia-Pacific
    - d. Or equal
  - 2. Physical Properties:
    - a. Tensile Strength: 250 psi (1.7 MPa) minimum; ASTM D 412, Die C, modified.
    - b. Ultimate Elongation: 300 percent minimum; ASTM D 412, Die C, modified.

- c. Low-Temperature Flexibility: Pass at minus 20 deg F (minus 29 deg C); ASTM D 1970.
- d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch (3-mm) movement; ASTM C 836.
- e. Puncture Resistance: 40 lbf (180 N) minimum; ASTM E 154.
- f. Hydrostatic-Head Resistance: 150 feet (45 m) minimum; ASTM D 5385.
- g. Water Absorption: 0.15 percent weight-gain maximum after 48-hour immersion at 70 deg F (21 deg C); ASTM D 570.
- h. Vapor Permeance: 0.05 perms (2.9 ng/Pa x s x sq. m); ASTM E 96, Water Method.

## 2.2 ADHESIVE-COATED HDPE SHEET WATERPROOFING

- A. Basis of Design Product: Subject to compliance with requirements, other products that may be incorporated into the Work include, but are not limited to, the following basis of design product:
  1. Grace, W. R. & Co.; Preprufe 300R.
  2. Carlisle
  3. Georgia-Pacific
  4. Or equal
- B. Adhesive-Coated HDPE Sheet for Vertical Applications: 32-mil- (0.8-mm-) thick, uniform, flexible sheets consisting of 16-mil- (0.4-mm-) thick, HDPE sheet coated with a pressure-sensitive rubber adhesive, a protective adhesive coating, and a release liner with the following physical properties:
  1. Tensile Strength, Film: 4000 psi (27.6 MPa) minimum; ASTM D 412.
  2. Low-Temperature Flexibility: Pass at minus 10 deg F (minus 23 deg C); ASTM D 1970.
  3. Peel Adhesion to Concrete: 5 lbf/in. (875 N/m); ASTM D 903, modified.
  4. Lap Adhesion: 2.5 lbf/in. (440 N/m); ASTM D 1876, modified.
  5. Hydrostatic-Head Resistance: 231 feet (70 m); ASTM D 5385, modified.
  6. Vapor Permeance: 0.01 perms (0.6 ng/Pa x s x sq. m); ASTM E 96, Water Method.
  7. Water Absorption: 0.5 percent; ASTM D 570.

## 2.3 VAPOR BARRIER

- A. Vapor barrier integrally bonded 0.5mm (0.021 in) nominal thickness composite sheet membrane comprising 0.4 mm (0.016 in) of polyolefin film, and layers of special formulated synthetic adhesive layers. The membrane shall form an integral and permanent bond to poured concrete to prevent vapor migration at the interface of the membrane and structural concrete. Membrane shall be Class A vapor barrier and exceed the requirements as defined by ASTM E 1745.



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1. Basis of Design Product: Subject to compliance with requirements, other products that may be incorporated into the Work include, but are not limited to, the following basis of design product:
  - a. Grace, W. R. & Co.; Floprufe 120.
  - b. Carlisle
  - c. Georgia-Pacific
  - d. Or equal
2. Physical Properties:
  - a. Thickness (nominal) 0.5mm (0.021 in) per ASTM D3767 Method A.
  - b. Water Vapor Permeance 0.03 perms per ASTM E96 Method B\*.
  - c. Tensile Strength 65 lb / in per ASTM E154\*.
  - d. Elongation 300% per ASTM D412.
  - e. Puncture Resistance 3300 grams per ASTM D1709\*.
  - f. Peel Adhesion to Concrete > 4 lb / in per ASTM D903.

\*ASTM E1745 Requirements.

#### 2.4 AUXILIARY MATERIALS

- A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
  1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- B. Primer: Liquid waterborne primer recommended for substrate by manufacturer of sheet waterproofing material.
- C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by manufacturer of sheet waterproofing material.
- D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, trowel grade or low viscosity.
- E. Substrate Patching Membrane: Low-viscosity, two-component, asphalt-modified coating.
- F. Sheet Strips: Self-adhering, rubberized-asphalt sheet strips of same material and thickness as sheet waterproofing.
- G. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.

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1. Detail Tape: Two-sided, pressure-sensitive, self-adhering reinforced tape, 4-1/2 inches (114 mm) wide, with a tack-free protective adhesive coating on one side and release film on self-adhering side.
- H. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick, predrilled at 9-inch (229-mm) centers.
- I. Protection Course: Extruded-polystyrene board insulation, unfaced, ASTM C 578, Type X, 1/2 inch (13 mm) thick.

## 2.5 INSULATION

- A. Board Insulation: Extruded-polystyrene board insulation complying with ASTM C 578, square or shiplap edged.
  1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Dow Chemical Company (The).
    - b. Owens Corning.
    - c. Pactiv Building Products.
    - d. Or approved equal.
  2. Type VI, 40-psi (276-kPa) minimum compressive strength.
  3. Type V, 100-psi (690-kPa) minimum compressive strength.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
  1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
  2. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
  3. Verify that compacted subgrade is dry, smooth, and sound; and ready to receive adhesive-coated HDPE sheet.
  4. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 SURFACE PREPARATION

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- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
- B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.
- E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
- F. Bridge and cover isolation joints, expansion joints and discontinuous deck-to-wall and deck-to-deck joints with overlapping sheet strips.
  - 1. Invert and loosely lay first sheet strip over center of joint. Firmly adhere second sheet strip to first and overlap to substrate.
- G. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
  - 1. Install membrane strips centered over vertical inside corners. Install 3/4-inch (19-mm) fillets of liquid membrane on horizontal inside corners and as follows:
    - a. At footing-to-wall intersections, extend liquid membrane each direction from corner or install membrane strip centered over corner.
    - b. At plaza deck-to-wall intersections, extend liquid membrane or sheet strips onto deck waterproofing and to finished height of sheet flashing.
- H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

### 3.3 MODIFIED BITUMINOUS SHEET WATERPROOFING APPLICATION

- A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions and according to recommendations in ASTM D 6135.
- B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- (64-mm-) minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.

1. When ambient and substrate temperatures range between 25 and 40 deg F (minus 4 and plus 5 deg C), install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F (16 deg C).
- D. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints.
- E. Seal exposed edges of sheets at terminations not concealed by metal counterflashings or ending in reglets with mastic.
- F. Install sheet waterproofing and auxiliary materials to tie into adjacent waterproofing.
- G. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches (150 mm) beyond repaired areas in all directions.
- H. Install protection course with butted joints over waterproofing membrane immediately.
- I. Correct deficiencies in or remove sheet waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

#### 3.4 ADHESIVE-COATED HDPE SHEET WATERPROOFING APPLICATION

- A. Install adhesive-coated HDPE sheets according to manufacturer's written instructions.
- B. Place and secure molded-sheet drainage panels over substrate. Lap edges and ends of geotextile to maintain continuity.
- C. Vertical Applications: Install adhesive-coated HDPE sheet with HDPE face against substrate. Accurately align sheets and maintain uniform 3-inch- (75-mm-) minimum lap widths and end laps. Overlap and seal seams and stagger and tape end laps to ensure watertight installation. Mechanically fasten to substrate.
  1. Securely fasten top termination of membrane with continuous metal termination bar anchored into substrate and cover with detailing tape.
- D. Corners: Seal lapped terminations and cut edges of sheet waterproofing at inside and outside corners with detail tape.
- E. Seal penetrations through sheet waterproofing to provide watertight seal with detail tape patches or wraps and a liquid-membrane troweling.
- F. Install sheet waterproofing and auxiliary materials to produce a continuous watertight tie into adjacent waterproofing.
- G. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Tape perimeter of damaged or nonconforming area extending 6 inches

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(150 mm) beyond repaired areas in all directions. Apply a patch of sheet waterproofing and firmly secure with detail tape.

- H. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

### 3.5 INSULATION INSTALLATION

- A. Install one or more layers of board insulation to achieve required thickness over waterproofed surfaces. Cut and fit to within 3/4 inch (19 mm) of projections and penetrations.
- B. On vertical surfaces, set insulation units in adhesive or tape applied according to manufacturer's written instructions.
- C. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

### 3.6 FIELD QUALITY CONTROL

- A. Engage a full-time site representative qualified by waterproofing membrane manufacturer to inspect substrate conditions; surface preparation; membrane application, flashings, protection, and drainage components; and to furnish daily reports to Architect.

### 3.7 PROTECTION AND CLEANING

- A. Protect waterproofing from damage and wear during remainder of construction period.
- B. Protect installed board insulation from damage due to UV light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 071326

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## SECTION 07 84 13 - FIRESTOPPING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Penetrations in fire-resistance-rated walls.
- 2. Penetrations in horizontal assemblies.

- B. Related Sections:

- 1. Division 07 Section "Fire-Resistive Joint Systems" for joints in or between fire-resistance-rated construction.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.

- 1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

- B. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer's written recommendations.

- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for penetration firestopping.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."
- B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:
  - 1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
  - 2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
    - a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
    - b. Classification markings on penetration firestopping correspond to designations listed by the following:
      - 1) UL in its "Fire Resistance Directory."
      - 2) FM Global in its "Building Materials Approval Guide."
- C. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.7 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.
- C. Notify Commissioner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.



## PART 2 - PRODUCTS

### 2.1 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
  - 1. Fire-resistance-rated walls include fire barrier walls and fire partitions.
  - 2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
  - 1. Horizontal assemblies include floors and floor/ceiling assemblies.
  - 2. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
  - 3. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- E. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
  - 1. Sealants: 250 g/L.
  - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
  - 3. Sealant Primers for Porous Substrates: 775 g/L.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
  - 1. Permanent forming/damming/backing materials, including the following:
    - a. Slag-wool-fiber or rock-wool-fiber insulation.
    - b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.

- c. Fire-rated form board.
  - d. Fillers for sealants.
- 2. Temporary forming materials.
  - 3. Substrate primers.
  - 4. Collars.
  - 5. Steel sleeves.

## 2.2 FILL MATERIALS

- A. **Cast-in-Place Firestop Devices:** Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. **Latex Sealants:** Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- C. **Firestop Devices:** Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. **Intumescent Composite Sheets:** Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized-steel sheet.
- E. **Intumescent Putties:** Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- F. **Intumescent Wrap Strips:** Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. **Mortars:** Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
- H. **Pillows/Bags:** Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- I. **Silicone Foams:** Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- J. **Silicone Sealants:** Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
  - 1. **Grade:** Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of nonsag grade for both opening conditions.

### 2.3 MIXING

- A. For those products requiring mixing before application, comply with penetration firestopping manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with manufacturer's written instructions and with the following requirements:
  - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping.
  - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.
  - 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

### 3.3 INSTALLATION

- A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
  - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.
- C. Install fill materials for firestopping by proven techniques to produce the following results:
  - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
  - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
  - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

### 3.4 IDENTIFICATION

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
  - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
  - 2. Contractor's name, address, and phone number.
  - 3. Designation of applicable testing and inspecting agency.
  - 4. Date of installation.
  - 5. Manufacturer's name.
  - 6. Installer's name.

### 3.5 FIELD QUALITY CONTROL

- A. Commissioner will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.
- C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

### 3.6 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.

### 3.7 PENETRATION FIRESTOPPING SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. Firestopping with No Penetrating Items:
  - 1. UL-Classified Systems: C-AJ-0001-0999, C-BJ-0001-0999, F-A-0001-0999, F-B-0001-0999, F-C-0001-0999, W-J-0001-0999, W-L-0001-0999.
  - 2. Type of Fill Materials: As required to achieve rating.
- C. Firestopping for Metallic Pipes, Conduit, or Tubing:
  - 1. UL-Classified Systems: C-AJ-1001-1999, C-BJ-1001-1999, C-BK-1001-1999, F-A-1001-1999, F-B-1001-1999, F-C-1001-1999, F-E-1001-1999, W-J-1001-1999, W-K-1001-1999, W-L-1001-1999, W-N-1001-1999.
  - 2. Type of Fill Materials: As required to achieve rating.
- D. Firestopping for Nonmetallic Pipe, Conduit, or Tubing:
  - 1. UL-Classified Systems: C-AJ-2001-2999, C-BJ-2001-2999, C-BK-2001-2999, F-A-2001-2999, F-B-2001-2999, F-C-2001-2999, F-E-2001-2999, W-J-2001-2999, W-K-2001-2999, W-L-2001-2999, W-N-2001-2999.
  - 2. Type of Fill Materials: As required to achieve rating.
- E. Firestopping for Electrical Cables:
  - 1. UL-Classified Systems: C-AJ-3001-3999, C-BJ-3001-3999, C-BK-3001-3999, F-A-3001-3999, F-B-3001-3999, F-C-3001-3999, F-E-3001-3999, W-J-3001-3999, W-K-3001-3999, W-L-3001-3999.
  - 2. Type of Fill Materials: As required to achieve rating.
- F. Firestopping for Cable Trays with Electric Cables:
  - 1. UL-Classified Systems: C-AJ-4001-4999, C-BJ-4001-4999, F-A-4001-4999, F-B-4001-4999, F-C-4001-4999, W-J-4001-4999, W-K-4001-4999, W-L-4001-4999.

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2. Type of Fill Materials: As required to achieve rating.
- G. Firestopping for Insulated Pipes:
1. UL-Classified Systems: C-AJ-5001-5999, C-BJ-5001-5999, C-BK-5001-5999, F-A-5001-5999, F-B-5001-5999, F-C-5001-5999, F-E-5001-5999, W-J-5001-5999, W-L-5001-5999, W-N-5001-5999.
  2. Type of Fill Materials: As required to achieve rating.
- H. Firestopping for Miscellaneous Electrical Penetrants:
1. UL-Classified Systems: C-AJ-6001-6999, C-BJ-6001-6999, F-A-6001-6999, W-L-6001-6999, W-J-6001-6999.
  2. Type of Fill Materials: As required to achieve rating.
- I. Firestopping for Miscellaneous Mechanical Penetrants:
1. UL-Classified Systems: C-AJ-7001-7999, C-BJ-7001-7999, F-A-7001-7999, F-B-7001-7999, F-C-7001-7999, F-E-7001-7999, W-J-7001-7999, W-L-7001-7999, W-N-7001-7999.
  2. Type of Fill Materials: As required to achieve rating.
- J. Firestopping for Groupings of Penetrants:
1. UL-Classified Systems: C-AJ-8001-8999, C-BJ-8001-8999, F-A-8001-8999, F-B-8001-8999, F-C-8001-8999, F-E-8001-8999, W-J-8001-8999, W-L-8001-8999.
  2. Type of Fill Materials: As required to achieve rating.

END OF SECTION 078413

## SECTION 07 84 46 - FIRE-RESISTIVE JOINT SYSTEMS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Joints in or between fire-resistance-rated constructions.

- B. Related Sections:

- 1. Division 07 Section " Firestopping" for penetrations in fire-resistance-rated walls and horizontal assemblies.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Product Schedule: For each fire-resistive joint system. Include location and design designation of qualified testing agency.

- 1. Where Project conditions require modification to a qualified testing agency's illustration for a particular fire-resistive joint system condition, submit illustration, with modifications marked, approved by fire-resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

- B. Installer Certificates: From Installer indicating fire-resistive joint systems have been installed in compliance with requirements and manufacturer's written recommendations.

- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fire-resistive joint systems.

## 1.5 QUALITY ASSURANCE

- A. **Installer Qualifications:** A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."
- B. **Fire-Test-Response Characteristics:** Fire-resistive joint systems shall comply with the following requirements:
  - 1. Fire-resistive joint system tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
  - 2. Fire-resistive joint systems are identical to those tested per testing standard referenced in "Fire-Resistive Joint Systems" Article. Provide rated systems complying with the following requirements:
    - a. Fire-resistive joint system products bear classification marking of qualified testing agency.
    - b. Fire-resistive joint systems correspond to those indicated by reference to designations listed by the following:
      - 1) UL in its "Fire Resistance Directory."
- C. **Preinstallation Conference:** Conduct conference at Project site.

## 1.6 PROJECT CONDITIONS

- A. **Environmental Limitations:** Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. **Install and cure fire-resistive joint systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.**

## 1.7 COORDINATION

- A. **Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.**
- B. **Coordinate sizing of joints to accommodate fire-resistive joint systems.**
- C. **Notify Commissioner's testing agency at least seven days in advance of fire-resistive joint system installations; confirm dates and times on day preceding each series of installations.**



## PART 2 - PRODUCTS

### 2.1 FIRE-RESISTIVE JOINT SYSTEMS

- A. Where required, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide fire-resistive joint systems with ratings determined per ASTM E 1966 or UL 2079:
  - 1. Joints include those installed in or between fire-resistance-rated walls and floor or floor/ceiling assemblies.
  - 2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.
- C. Exposed Fire-Resistive Joint Systems: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- D. VOC Content: Fire-resistive joint system sealants shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
  - 1. Architectural Sealants: 250 g/L.
  - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
  - 3. Sealant Primers for Porous Substrates: 775 g/L.
- E. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. **Surface Cleaning:** Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
  - 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
  - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
  - 3. Remove laitance and form-release agents from concrete.
- B. **Priming:** Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. **Masking Tape:** Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates.

### 3.3 INSTALLATION

- A. **General:** Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
  - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:
  - 1. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
  - 2. Apply fill materials so they contact and adhere to substrates formed by joints.
  - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

### 3.4 IDENTIFICATION

- A. Identify fire-resistive joint systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels will be visible to anyone seeking to remove or penetrate joint system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
1. The words "Warning - Fire-Resistive Joint System - Do Not Disturb. Notify Building Management of Any Damage."
  2. Contractor's name, address, and phone number.
  3. Designation of applicable testing agency.
  4. Date of installation.
  5. Manufacturer's name.
  6. Installer's name.

### 3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Commissioner will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or fire-resistive joint systems are damaged or removed due to testing, repair or replace fire-resistive joint systems so they comply with requirements.
- C. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and installations comply with requirements.

### 3.6 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

### 3.7 FIRE-RESISTIVE JOINT SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHBN.

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B. Wall-to-Wall, Fire-Resistive Joint Systems:

1. UL-Classified Systems: WW-S- 0000-0999.

C. Head-of-Wall, Fire-Resistive Joint Systems:

1. UL-Classified Systems: HW-S- 0000-0999.

END OF SECTION 078446

## SECTION 07 92 00 - JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Latex joint sealants.
4. Acoustical joint sealants.

- B. Related Sections:

1. Division 04 Section "Concrete Unit Masonry" for masonry control joint fillers and gaskets.
2. Division 07 Section "Fire-Resistive Joint Systems" for sealing joints in fire-resistance-rated construction.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.

- B. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation including printed statement of VOC content.

- C. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

- D. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

- E. Joint-Sealant Schedule: Include the following information:

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1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- C. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- E. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- F. Field-Adhesion Test Reports: For each sealant application tested.
- G. Warranties: Sample of special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
  1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
  2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.
- D. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

## 1.7 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Periods:

- a. Silicone sealants: 20 years from date of Substantial Completion
- b. Urethane sealants: Five years from date of Substantial Completion

- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

- B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
  - 1. Architectural Sealants: 250 g/L.
  - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
  - 3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

## 2.2 SILICONE JOINT SEALANTS

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 791.
    - b. Momentive Performance Materials, Inc.; SilPruf SCS2000.
    - c. Pecora Corporation; 864.
    - d. Tremco Incorporated; Spectrem 3.
    - e. Or approved equal
  - 2. Sealant shall have a current validation certificate from the Sealant, Waterproofing and Restoration Institute (SWRI).
  - 3. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range; multiple colors will be required.
  - 4. Locations: Typical exterior joints in vertical surfaces and in horizontal non-traffic surfaces.
- B. Mildew-Resistant, Single-Component, Nonsag, Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 786 Mildew Resistant.
    - b. Momentive Performance Materials, Inc.; Sanitary SCS1700.
    - c. Pecora Corporation; 898.



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- d. Tremco Incorporated; Tremsil 200 Sanitary.
- e. Or approved equal

- 2. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.
- 3. Locations: Plumbing fixture and ceramic tile joints.

### 2.3 URETHANE JOINT SEALANTS

- A. Multicomponent, Nonsag, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade P, Class 25, for Use T.

- 1. Products: Subject to compliance with requirements, provide one of the following:
  - a. BASF Building Systems; Sonolastic SL 2.
  - b. Pecora Corporation; Urexpan NR-200 .
  - c. Tremco Incorporated; THC 900/901
  - d. Or approved equal.
- 2. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.
- 3. Locations: Typical exterior and interior horizontal traffic joints.

### 2.4 LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

- 1. Products: Subject to compliance with requirements, provide one of the following:
  - a. BASF Building Systems; Sonolac.
  - b. Pecora Corporation; AC-20+.
  - c. Tremco Incorporated; Tremflex 834.
  - d. Or approved equal
- 2. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.
- 3. Locations: Typical interior joints in vertical surfaces and in horizontal non-traffic surfaces, except as otherwise indicated.

### 2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Pecora Corporation; AC-20 FTR.
  - b. USG Corporation; SHEETROCK Acoustical Sealant.
  - c. Owins Coming; QuietZone
  - d. Or equal
2. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

## 2.6 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

## 2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
    - a. Concrete.
    - b. Masonry.
    - c. Unglazed surfaces of ceramic tile.
  - 3. Remove laitance and form-release agents from concrete.
  - 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
    - a. Metal.
    - b. Glass.
    - c. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings. Coordinate with installation of weep tubes associated with stone installation.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration, except do not seal weep tubes associated with stone installation.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealant from surfaces adjacent to joints.
  - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
    - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.
- G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.

### 3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test exterior joint-sealant adhesion to joint substrates as follows:

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1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
    - b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.
  2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
    - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
  3. Inspect tested joints and report on the following:
    - a. Whether sealants filled joint cavities and are free of voids.
    - b. Whether sealant dimensions and configurations comply with specified requirements.
    - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
  4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
  5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.
- 3.5 CLEANING
- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

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3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

SECTION 08 12 13 - HOLLOW METAL FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Standard hollow metal frames.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.4 ACTION SUBMITTALS

- A. Product Data:
  - 1. For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.
- B. Shop Drawings: Include the following:
  - 1. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
  - 2. Locations of reinforcement and preparations for hardware.
  - 3. Details of each different wall opening condition.
  - 4. Details of anchorages, joints, field splices, and connections.
  - 5. Details of accessories.
  - 6. Details of moldings, removable stops, and glazing.
  - 7. Details of conduit and preparations for power, signal, and control systems.
- C. Samples for Verification:

1. For the following items, prepared on Samples about 12 by 12 inches to demonstrate compliance with requirements for quality of materials and construction:
  - a. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow metal panels and glazing if applicable.

D. Other Action Submittals:

1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal frame assembly.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
- B. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
  1. Provide additional protection to prevent damage to finish of factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch-high wood blocking. Do not store in a manner that traps excess humidity.

1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.



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1.9 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
  - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- E. Powder-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 hollow metal frames of type indicated.
- F. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.
- G. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.2 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Interior Frames: Fabricated from cold-rolled steel sheet.
  - 1. Fabricate frames with mitered or coped corners.
  - 2. Fabricate frames as face welded unless otherwise indicated.
  - 3. Frames for Wood Doors: 0.053-inch-thick steel sheet.

- C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

## 2.3 FRAME ANCHORS

### A. Jamb Anchors:

1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
2. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch- diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

- B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick; clip-type anchors, with two holes to receive fasteners.

## 2.4 ACCESSORIES

- A. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch- wide steel.

- B. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

## 2.5 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

- B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.

- C. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
4. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.

5. Jamb Anchors: Provide number and spacing of anchors as follows:
  - a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
    - 1) Three anchors per jamb up to 60 inches high.
    - 2) Four anchors per jamb from 60 to 90 inches high.
    - 3) Five anchors per jamb from 90 to 96 inches high.
    - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
    - 5) Two anchors per head for frames above 42 inches wide and mounted in metal-stud partitions.
  - b. Compression Type: Not less than two anchors in each jamb.
  - c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
6. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
  - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
  - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- D. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
  1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
  2. Reinforce frames to receive nontemplated, mortised and surface-mounted door hardware.
  3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
  4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

## 2.6 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
  1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by

primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
  - 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
  - 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
  - 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  - 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap frames to receive nontemplated, mortised, and surface-mounted door hardware.

#### 3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

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- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.
1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    - a. At fire-protection-rated openings, install frames according to NFPA 80.
    - b. Install frames with removable glazing stops located on secure side of opening.
    - c. Install door silencers in frames before grouting.
    - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    - e. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    - f. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.
  2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
    - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
  3. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

### 3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

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END OF SECTION 081213

## SECTION 08 70 00 – DOOR HARDWARE

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Work Included: The Work of this Section shall include but not be limited to the following:  
1. Furnishing and installing of finish hardware.

B. Related Sections:

1. Section 081213 Hollow Metal Frames

#### 1.2 QUALITY ASSURANCE

- A. Finish hardware where required shall conform to the applicable requirements of the American Insurance Association, Underwriter's Laboratories, Inc., local codes and all other regulations and agencies having jurisdiction. Such items of hardware shall bear a label or mark indicating its conformance to the above requirements.
- B. Manufacturer: A finish hardware manufacturer who has been successfully manufacturing products of the type specified for not less than 3 years. Each type of finish hardware or accessory shall be obtained from only one manufacturer.
- C. Supplier: Finish hardware supplier who have been furnishing finish hardware, for a period of not less than 2 years. The finish hardware supplier shall be or have in employment an Architectural Hardware Consultant (AHC) in good standing as certified by the Society of Architectural Hardware Consultants Council. Each supplier shall be available as required during the course of the work for project hardware consultation to the Commissioner and Contractor.
1. Upon completion of the work each supplier shall inspect their installations with manufacturer's representatives and submit a letter to the Owner advising that all items required have been installed and are operating properly.

#### 1.3 REFERENCES

- A. Comply with applicable provisions of the following reference standards except as otherwise shown or specified.
1. Building Hardware Manufacturer's Association (BHMA).
  2. Underwriter's Laboratories (UL).
  3. United States Standards (US).
  4. American National Standards Institute (ANSI).

#### 1.4 SUBMITTALS

- A. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Hardware supplier shall prepare and submit for approval 6 copies of the complete detailed hardware schedule. This shall be done within 30 working days after receipt of Award of Contract.
- C. Samples: For each finish, color, and texture required for each type of door hardware indicated.
- D. The Commissioner will check the schedule submitted for quality and types, but the supplier of hardware shall be solely responsible for any errors or omissions of the schedules, and all security hardware equal in kind and quality to that herein specified or required shall be supplied.
- E. Identify hardware items unsuitable for use as scheduled.
  - i. If requested by the Commissioner, a sample of each hardware item shall be supplied as required for comparison with hardware as furnished. Any deviation from hardware schedule shall be replaced with the proper hardware at hardware supplier's expense.
  - ii. Templates and/or shop drawing information shall be sent to each manufacturer who requires such information. Approved hardware schedule shall be sent to each manufacturer who requires template information.

#### 1.5 PRODUCT HANDLING

- A. As hardware is received, sort and repackage in containers marked with the hardware set number.
- B. Upon delivery to jobsite, Contractor's representative shall inventory the delivered hardware with a representative of the hardware supplier. Both Contractor and supplier shall be satisfied that the count is correct before delivery is accepted. Copies of all shipping and receiving reports shall be forwarded to the Commissioner.
- C. Hardware installer shall provide secure lock-up for hardware that is not installed. Control the handling and installation of hardware items which are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses, both before and after installation.

#### 1.6 JOB CONDITIONS

- A. Coordination: Coordinate hardware with other work. Tag each item or package separately, with identification related to the hardware schedule, and include basic installation



instructions in the package. Provide hardware items of proper design for door thickness, profile, swing, security and similar requirements, for proper installation and function. Deliver individually packaged hardware items at the proper times to the proper locations for installation.

- B. Product Information: Furnish hardware templates installation instructions and wiring diagrams as required to each fabricator of doors and frames to be factory-prepared for the installation of hardware. Upon request, check the shop drawings of such other work, to confirm that adequate provisions are made for the proper installation of hardware.

## PART 2 - PRODUCTS

### 2.1 SCHEDULED HARDWARE

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of builders' hardware are indicated. Products are identified by using appropriate hardware designation numbers.
- B. One or more manufacturers are listed for each hardware type required. Provide either the product designated, or the equivalent product of one of the other listed manufacturers. Provide products of a single manufacturer for each product type.

### 2.2 MATERIALS AND FABRICATION, GENERAL

- A. The drawings show the direction of movement of each door leaf. Furnish each item of hardware for proper installation and operation of the door movement as shown.
- B. Do not use manufacturer's products which have manufacturer's name or trade name in a visible location, except in conjunction with required UL labels.
- C. Provide hardware units of no lesser quality than specified. Do not furnish "optional" materials or forming methods for those indicated.
- D. Fasteners: Manufacture hardware to conform to published templates, generally prepared for machine screw installation. Do not furnish hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.
  - a. Provide concealed fasteners for hardware units which are exposed when the door is closed, except to the extent no standard units are available with concealed fasteners. Standard exposed fasteners shall be modified to render the installations vandal resistant, but readily serviceable for maintenance. Welded covers will not be acceptable.
- E. Should any hardware, even though required by the Contract Drawings or Specifications, fail to meet the intended requirements or require modification to suit or fit the designated location, such correction and modification shall be made as necessary and in ample time to void delay in the manufacture and delivery of the hardware. Changes and modifications shall not be made without prior notification, and approval, by the Commissioner. The Con-

tractor shall make such corrections and modifications as directed and approved without extra cost to the Owner.

## 2.3 HINGES

### A. Butt Hinges - Acceptable Manufacturers

1. McKinney Mfg. Co. (scheduled)
2. Stanley Works
3. Hager Hinge Co.
4. Or approved equal.

### B. Note: Unless otherwise noted, butt hinges shall be full mortise, five knuckle ball or oil impregnated bearings with flat button tip.

5. Doors up to 3'-0" - Standard Weight. TA2714 - 4-1/2 x 4-1/2 inches
2. Doors over 3'-0", Extra Heavy Weight TA3786 5 x 4-1/2 inches.
3. Doors up to 7'-6" - 1-1/2 pair per leaf.
4. Doors over 7'-6" to 10'-0" - 2 pair per leaf.

### C. Hinges shall conform to ANSI/BHMA A156.1.

## 2.4 CLOSERS

### A. Acceptable Manufacturers for Overhead Surface Closers:

1. Norton 7500 Series
2. Yale
3. LCN
4. Or approved equal

### B. Closers are required to be accessible to the physically handicapped. Provide adjustable units complying with ANSI A117.1 provisions for door opening force and delayed action closing.

### C. Closers scheduled for fire labeled doors shall bear Underwriter's Laboratories, Inc. approval.

### D. Closers shall have secure arms and covers.

### E. Closers shall be sized in accordance with the accepted manufacturer's standards to suit height, width, weight of door and draft conditions.

### D. Provide parallel arms where arms of regular closers would protrude into corridor. All closers shall be installed on room side of door.

## 2.5 LOCKS

### A. Acceptable Manufacturers:

1. Accurate
2. Yale Cylindrical 5400LN series
3. Yale Mortise 8800 series
4. Omnia
5. Or approved equal

B. Provide nonferrous metal strikes with lips of sufficient length to protect jambs. Finish strikes with wrought box strikes and treat lock parts with bronze alloy plating to resist corrosion.

C. Locks shall comply with ANSI/BHMA A156.13.

D. Locks and Latch sets shall have 2 ½" or 2 ¾" backset as required.

E. Provide extended spindles to suit door thickness.

## 2.6 CYLINDERS AND KEYING

A. Provide locks with cylinders which comply with performance requirements of ANSI A156.5.

1. Provide cylinders subject to NYCH existing key system.

B. Supplier shall provide for a master key system and will meet with the Commissioner to determine additional keying requirements. The Contractor shall obtain final instructions in writing. The keying schedule will be forwarded to the Contractor by the Commissioner upon acceptance of the shop drawings and hardware schedule.

C. Keys: Furnish individual change keys for each lock not designated to be keyed alike with a group of related locks.

1. Key Material: Provide keys of nickel silver only.

2. Key Quantity: Furnish 3 change keys for each lock and 5 master keys for each master system. Provide 6 construction master keys.

3. Deliver keys to the Owner at Final Completion.

## 2.7 BOLTS

### A. Acceptable Manufacturers:

1. McKinney (scheduled).
2. Rockwood

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3. Trimco
4. Or approved equal

B. Provide extension type flush bolts. Provide each bottom flushbolt with a dustproof strike.

## 2.8 DOOR STOPS

A. Acceptable Manufacturers:

1. McKinney(scheduled)
2. Rockwood
3. Trimco
4. Or approved equal

B. Where wall stops are to be used for doors located in gypsum board partitions, provide 20 gage reinforcing as required.

C. Provide overhead stops at doors where wall or floor stops can't be used.

## 2.9 OVERHEAD STOPS AND HOLDERS

A. Acceptable Manufacturers:

1. Rixson (Scheduled).
2. Sargent
3. Schlage
4. Or approved equal

## 2.10 THRESHOLDS, WEATHERSTRIPPING AND DROP SEALS

A. Acceptable Manufacturers:

1. Pemko
2. Zero
3. Reese
4. Or approved equal

B. Thresholds shall be extruded aluminum unless otherwise indicated.

## 2.11 SILENCERS

A. Acceptable Manufacturers:

1. McKinney.
2. Rockwood
3. Ives
4. Or approved equal

B. Provide silencers for all non-gasketed metal frames. Provide 3 for each single swing

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door and 2 for pairs of doors.

## 2.12 EXIT DEVICES

### A. Acceptable Manufacturers:

1. Yale 1500 Series
2. Corbin Russwin ED4000 Sseries
3. Von Duprin 88 series
4. Or approved equal

## 2.13 PROTECTION, PUSH-PULL PLATES

### A. Kick Plates: Stainless steel 302 or 304, .050 thick, with 3 beveled edges.

1. Sizes: 12 inches high by 2 inches, less door width on single door and 1 inch less door width on pair doors.
2. Acceptable Manufacturer:
  - a. Rockwood Mfg.
  - b. McKinney (scheduled)
  - c. Trimco
  - d. Or approved equal

## 2.14 FINISHES

### A. Finishes Specified:

- |                     |              |
|---------------------|--------------|
| 1. Satin Chrome     | US26D (626)  |
| 2. Stainless Steel  | US32D (630). |
| 3. Painted Aluminum | 689          |
| 4. Satin Bronze     | US10 (613)   |

## PART 3 - EXECUTION

### 3.1 GENERAL

- #### A.
- Furnish suitable templates, together with the reviewed finish hardware schedule, to the respective trades as required, to insure the accurate setting and fitting of finish hardware.

### 3.2 HARDWARE APPLICATION

- A. Locate hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations and except as may be otherwise directed.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finish work specified in the Division-9 Sections. Do not install surface-mounted items until finishes have been completed on the substrate.
- C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

### 3.3 ADJUST AND CLEAN

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Demonstrate to the Commissioner that each item is in perfect working order and that tagged keys operate respective locks. Correct items of hardware not acceptable to the Architect. Deliver tagged keys to the Commissioner upon acceptance of each core cylinder installation.
- C. Adjust door control devices to compensate for final operation of heating, cooling and ventilation equipment.

### 3.4 HARDWARE SETS -BASEMENT STANDARD STAINLESS STEEL

**SEE DRAWING A - 401.00 FOR HARDWARE SETS**

END OF SECTION

**SECTION 21 05 00 - COMMON WORK RESULTS FOR FIRE PROTECTION**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES:**

**A. Work Included:**

1. The system shall include modification to wet sprinklers. Building or area will remain fully sprinkled (exception only as per local code).
2. Before any work is commenced, shop drawings shall be carefully prepared and submitted for approval. It is required that the sprinkler systems be sized hydraulically in accordance with NFPA standards. Submit hydraulic calculation of each system modification with shop drawings showing balanced system delivery, and balanced supply and demand for the appropriate hazard class as defined in NFPA 13, latest edition accepted by local authority having jurisdiction. Such drawings and calculations must be reviewed and approved by all governing authorities, Fire Department, City of New York's Insurance Underwriters, Factory Mutual and/or Industrial Risk Insurers before any work is commenced at the jobsite.

**1.2 RELATED DOCUMENTS**

**A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.**

**B. Related Work**

1. Division 21, WET PIPE SPRINKLERS.
2. Division 22, PLUMBING.
3. Division 23, HEATING, VENTILATING AND AIR CONDITIONING (HVAC)
4. Other Sections where applicable.

**1.3 DEFINITIONS**

- A. Finished Spaces:** Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed:** Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Concealed:** Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
- D. Exterior Installations:** Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.

- E. Interior Installations: Protected from weather conditions and not subject to outdoor ambient temperatures.
- F. Piping: Pipe, fittings, flanges, valves, controls, hangers, drains, insulation, and items customarily required in connection with the transfer of gaseous and fluid mediums.
- G. By Other Trades: By persons or parties responsible for work at the project other than the party or parties who have been duly awarded the contract for the work of this Trade. In the event that this document is used to acquire work as part of a general construction contract the words "by other trades" shall mean by persons or parties who are not anticipated to be the sub-contractor for this trade working together with the general contractor. In this context the words "by other trades" shall not be interpreted to mean not included in the overall contract.

#### 1.4 SUBMITTALS:

- A. Prior to purchasing any equipment or materials and prior to assembling or installing the work, the following shall be submitted for approval:
  - 1. Scale drawings indicating insert and sleeve locations if required by Commissioner.
  - 2. Scale drawings showing all piping and duct runs with sizes, elevations and appropriate indication of coordination with other trades. This submission to us shall consist of one (1) original and six (6) prints.
  - 3. Catalog information, factory assembly drawings and field installation drawings as required for a complete explanation and description of all items of equipment. List all manufacturers and certifications. Submit min. six (6) copies.
- B. Documents will not be accepted for review unless:
  - 1. They include complete information in accordance with local code and with the applicable sections of NFPA including 13, 14 and 20 pertaining to appurtenances and accessories.
  - 2. They are submitted as a package where they pertain to related items.
  - 3. They are properly marked with service or function, project name, where they consist of catalog sheets displaying other items which are not applicable.
  - 4. They indicate the project name and address along with the Contractor's name, address and phone number.
  - 5. They are properly marked with external connection identification as related to the project where they consist of standard factory assembly or field installation drawings.



C. Shop Drawing Review

1. The purpose of the review of shop drawings is to maintain integrity of the design. Unless the contractor clearly points out changes, substitutions, deletions or any other differences between the submission and the Contract Documents in writing on the Contractor's letterhead, approval by the Commissioner does not constitute acceptance. It is not to be assumed that the Commissioner has read the text nor reviewed the technical data of a manufactured item and its components except where the Vendor has pointed out differences between his product and the specified model.
2. It is the responsibility of the contractor to confirm all dimensions, quantities, and the coordination of materials and products supplied by him with other trades. Approval of shop drawings containing errors does not relieve the contractor from making corrections at his expense.
3. Substitutions of equipment, systems, materials, must be coordinated by the Contractor with his own or other trades which may be involved with the item, such as, but not limited to, equipment substitutions which change electrical requirements, or hanging or support weights or dimensions.
4. Any extra charges or credits which may be generated by other trades due to substitutions will not be accepted unless the Contractor has an agreement in writing with the City of New York.
5. Substitutions of equipment, systems, etc. requiring approval of local authorities must comply with such regulations and be filed at the expense of the Contractor (should filing be necessary). Substitutions are subject to approval or disapproval by the Commissioner. The Contractor in offering substitutions shall hold the City of New York and Commissioner harmless if the substituted item is an infringement of patent held by the specified item.
6. Shop drawings shall show all data required by NFPA and Authorities having Jurisdiction.

D. Explanation of Shop Drawing Stamp

1. Reviewed - No Exception Taken: indicates that we have not found any reason why this item should not be acceptable within the intent of the contract documents.
2. Exception Taken As Noted: indicates that we have found questionable components which if corrected or otherwise explained make the product acceptable.
3. Revise and Resubmit: indicates that this item should be resubmitted for review before further processing.
4. Resubmit Specified Item: indicates that the item will not meet the intent of the Contract.

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5. Incomplete - Resubmit: Indicates that the submission is not complete and ready for review by the Commissioner.
6. No shop drawing stamp or note shall constitute an order to fabricate or ship. Such notification can only be performed by the Project Manager for Construction, the Contractor scheduling his own work, or the City of New York.
7. The Contractor is responsible for having "Reviewed" copies of shop drawings bearing the Reviewed - No Exception Taken stamp of the Commissioner or City of New York's Consultant are kept on the job site and work is implemented in the field in accordance with these documents.
8. Where information from one Contractor is required by another contractor, it is the responsibility of the contractors to exchange information and coordinate their work.

E. Maintenance Data and Operating Instructions:

1. After all final tests and adjustments have been completed, fully instruct the proper Commissioner in all details of operation for equipment installed. Supply qualified personnel to operate equipment for sufficient length of time to assure that Commissioner is properly qualified to take over operation and maintenance procedures. Supply qualified personnel to operate equipment for sufficient length of time as required to meet all governing authorities in operation and performance tests.
2. Furnish required number of manuals, in bound form containing data covering capacities, maintenance of operation of all equipment and apparatus. Operating instruction shall cover all phases of control and include the following:
  - a. List of Spares: Recommended for normal service requirements.
3. Where applicable, one set of operating and maintenance instructions shall be neatly hung adjacent to the equipment concerned.

1.5 QUALITY ASSURANCE

- A. Applicator: Company specializing in piping installation with three years minimum experience.
- B. Systems, installation, equipment and materials shall conform to requirements of the local Building Code, City of New York Insurance Underwriters, Factory Mutual, Industrial Risk Insurers, local Fire Department, N.F.P.A., ANSI/ASME B31.9 "Building Service Piping" and all authorities having jurisdiction. Equipment and materials Underwriters listed, labeled and approved as required.
- C. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
- D. Products Criteria
  1. All equipment and materials shall be new and without blemish or defect.

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2. New equipment and materials shall be Underwriters Laboratories, Inc. (U.L.) listed for fire protection use where specifically called for or where normally subject to such U.L. listing services.
3. Asbestos
  - a. All equipment and materials shall be free of asbestos.
4. It is the intent of these specifications that wherever a manufacturer of a product is specified, and the terms "other approved" or "or approved equal" or "equal" are used, the substituted item must conform in all respects to the specified item. Consideration will not be given to claims that the substituted item meets the performance requirements with lesser construction. Performance as delineated in schedules and in the specifications shall be interpreted as minimum performance. In many cases equipment is oversized to allow for pick-up loads which cannot be delineated under the minimum performance.
5. All equipment of one type shall be the products of one manufacturer.
6. Substituted equipment or optional equipment where permitted and approved, must conform to space requirements. Any substituted equipment that cannot meet space requirements, whether approved or not, shall be replaced at the Contractor's expense. Any modifications of related systems as a result of substitutions shall be made at the Contractor's expense.
7. Note that the approval of shop drawings, or other information submitted in accordance with the requirements hereinbefore specified, does not assure that the Commissioner, attests to the dimensional accuracy or dimensional suitability of the material or equipment involved or the ability of the material or equipment involved or the mechanical performance of equipment. Approval of Shop Drawings does not invalidate the plans and specifications if in conflict, unless a letter requesting such change is submitted and approved on the Commissioner's letterhead.
8. Substitutions of equipment for that shown on the schedules or designated by model number in the specifications will not be considered if the item is not a regular cataloged item shown in the current catalog of the manufacturer.

1.6 DELIVERY, STORAGE, HANDLING AND PROTECTION

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- B. This trade shall be responsible for its work and equipment until finally inspected, tested and accepted. Carefully store materials and equipment which are not immediately installed after delivery to site. Close open ends of work with temporary covers or plugs during construction to prevent entry of obstructing material.
- C. This trade shall protect work and material of other trades from damage that might be caused by its work or workmen and make good damage thus caused.

## 1.7 COORDINATION

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for mechanical installations.
- B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- C. Provide all designating signs for shutoff valves, control valves, alarms, and the like, as required by the agencies having jurisdiction.

## 1.8 COORDINATION DRAWINGS

- A. Prepare coordination drawings to a scale of 3/8"=1'-0" or larger; detailing major elements, components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the Work, including (but not necessarily limited to) the following:
  - 1. Indicate the proposed locations of piping, equipment, and materials. Include the following:
    - a. Planned piping layout, including valve and specialty locations and valve stem movement.
    - b. Clearances for servicing and maintaining equipment, including space for equipment disassembly required for periodic maintenance.
    - c. Equipment connections and support details.
    - d. Exterior wall and foundation penetrations.
    - e. Fire-rated wall and floor penetrations.
    - f. Sizes and location of required concrete pads and bases.
    - g. Clearances as required by Electric Code.
  - 2. Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.
  - 3. Prepare reflected ceiling plans to coordinate and integrate sprinkler installations, air outlets and inlets, light fixtures, communication systems components and other ceiling-mounted items.

B. Record Drawings

1. As part of the required fire protection work, a complete set of "as-built" or record drawings shall be made up and delivered to the Commissioner.
2. The drawings shall show:-
  - a. All work installed exactly in accordance with the original design.
  - b. All installed as a modification or addition to the original design.
  - c. The dimensional information necessary to delineate the exact location of all piping runs which are so concealed as to be untraceable by inspection through the regular means of access established for inspection and maintenance.
3. Where shop drawings have been prepared and approved, the "as-built" drawings shall be cross referenced to the respective shop drawing.
4. As-built record drawings shall include the updating of all equipment schedule sheets.
5. The record drawings shall be of legible reproducible and durable type.
6. The Contractor shall make arrangements with the Commissioner to obtain design drawings on DVD or compact diskettes in AutoCad format for use as a basis for the "as-built" drawings.
7. Prior to developing any "as-built" drawings, the contractor shall coordinate with the City of New York and Commissioner the drawing layers, colors, etc., of the CAD drawings.
8. "As-built" information shall be submitted as follows:
  - a. CAD drawing files on DVD or compact diskettes in AutoCad format.
  - b. One (1) set of reproducible drawings.
9. The quantity of design drawings which are made available shall in no way be interpreted as setting a limit to the number of drawings necessary to show the required "as-built" information.
10. This trade shall submit the "as-built" set for approval by the Commissioner in a form acceptable to the Commissioner.
11. Final acceptance of the fire protection systems by the authority having jurisdiction will not be implemented until "as-built" drawings are on site.
12. As-built/record drawings shall comply with NFPA 13, 14, 20 and all other applicable standards.

1.9 INTERPRETATION OF THE DRAWINGS AND SPECIFICATIONS

- A. As used in the drawings and specifications, certain non technical words shall be understood to have specific meanings as follows:
1. "Furnish"-----Purchase and deliver to the project site complete with every necessary appurtenance and support.
  2. "Install"-----Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project.
  3. "Provide"-----"Furnish" and "Install".
- B. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any item, in the drawings or specifications or both, carries with it the instruction to furnish and install the item, regardless of whether or not this instruction is explicitly stated as part of the indication or description.
- C. It shall be understood that the specifications and drawings are complementary and are to be taken together for a complete interpretation of the work. Where there are conflicts between the drawings and specifications or within the specifications or drawings themselves, the items of higher standard shall govern.
- D. No exclusions from, or limitations, in the language used in the drawings or specifications shall be interpreted as meaning that the appurtenances or accessories necessary to complete any required system or item of equipment are to be omitted.
- E. The drawings of necessity utilize symbols and schematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installations. The work shall be installed, in accordance with the diagrammatic intent expressed on the drawings, and in conformity with the dimensions indicated on final architectural and structural working drawings and on equipment shop drawings.
- F. No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete work are excluded.
- G. Certain details appear on the drawings which are specific with regard to the dimensioning and positioning of the work. These details are intended only for the purpose of establishing general feasibility. They do not obviate field co-ordination for the indicated work.
- H. Information as to the general construction shall be derived from structural and architectural drawings and specifications only.
- I. The use of words in the singular shall not be considered as limiting where other indications denote that more than one item is referred to.
- J. In the event that extra work is authorized, and performed by this trade, work shown on drawings depicting such work, and/or described by Bulletin is subject to the base building specifications in all respects.

#### 1.10 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
1. Reference Definition
  2. ASTM American Society for Testing Materials
  3. NFPA National Fire Protection Association
  4. UL Underwriters Laboratories, Inc.
  5. NEMA National Electrical Manufacturers Assn.
  6. FM Factory Mutual
  7. USAS United States of America Standards Institute
  8. ANSI American National Standards Institute
  9. AWWA American Water Works Association
  10. F.S. Federal Specifications, U.S. Government
  11. I.S.O. Insurance Services Organization

#### 1.11 CODES, PERMITS AND INSPECTIONS

- A. All work shall meet or exceed the latest requirements of all national, state, county, municipal and other authorities exercising jurisdiction over construction work at the project.
- B. All required permits, approval and inspection certificates shall be obtained, paid for, and made available at the completion of the work, by the Fire Protection Contractor.
- C. Any portion of the work which is not subject to the approval of an authority having jurisdiction, shall be governed by the applicable sections of the overall National Fire Code, as published by the National Fire Protection Association (NFPA).
- D. Installation procedures, methods, and conditions shall comply with the latest requirements of The Federal Occupational Safety and Health Act (OSHA).
- E. Prepare and submit to the building department a set of "as-built" record drawings for approval, in a form acceptable to the building department.
- F. The Fire Protection Contractor shall be responsible for the installation and filing until the installation has been approved by the authorities having such jurisdiction.

- G. All equipment shall comply with "Materials & Equipment Acceptance Division" of the N.Y.C. Office of Technical Certification and Research (QTCR) and/or the Advisory Board of the Bureau of Gas and Electricity as applicable. Filing and approvals of such equipment shall be the responsibility of this trade. If equipment is substituted for manufacturers model numbers shown on the contract documents and filed with the building department and/or Advisory Board, this trade shall have the responsibility of preparing and filing amendments with the Building Department. Application for Use Permits shall be filed by this trade,

#### 1.12 GUARANTEES AND CERTIFICATIONS

- A. All work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from same shall be replaced or repaired as directed for the duration of stipulated guaranteed periods.
- B. The duration of guarantee periods following the date of beneficial use of the system shall be one year. Beneficial use is defined as operation of the system to obtain its intended use.
- C. The date of acceptance shall be the date of the final payment for the work or the date of a formal notice of acceptance, whichever is earlier.
- D. Certification shall be submitted attesting to the fact that specified performance criteria are met by all items of Fire Protection equipment.

#### 1.13 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Before submitting prices or beginning work, thoroughly examine the site and the Contract Documents.
- B. No claim for extra compensation will be recognized if difficulties are encountered which examination of site conditions and Contract Documents prior to executing Contract would have revealed.

#### 1.14 WORKMANSHIP

- A. The entire work provided in this Specification shall be constructed and finished in every respect in a workmanlike and substantial manner.
- B. It is not intended that the drawings shall show every pipe, fitting and appliance. Fire Protection Contractor shall furnish and install all such parts as may be necessary to complete the systems in accordance with the best trade practice.
- C. Keep other trades fully informed as to shape, size and position of all openings required for apparatus and give full information to the General Contractor and other trades in a timely manner so that all openings may be built in advance.
- D. In case of failure on the part of the Fire Protection Contractor to give proper and timely information as required above, he shall do his own cutting and patching or have some done by the General Contractor, but in any case, without extra expense to the City of New York.



- E. Obtain detailed information from the manufacturers of apparatus as to the proper method of installing and connecting same. Obtain all information from the General Contractor and other trades which may be necessary to facilitate work and completion of the whole project.

#### 1.15 CONTINUITY OF SERVICES

- A. Do not interrupt existing services without Commissioner's approval.
- B. Schedule interruptions in advance, according to Commissioner instructions. Submit, in writing, with request for interruption, methods proposed to minimize impact on City of New York's operations. Interruptions shall also be coordinated with the local Fire Department.
- C. Interruptions shall be scheduled at such times of day and work to minimize impact on City of New York's operations.

#### 1.16 FIRE FLOW TEST

- A. The Fire Protection Contractor shall perform up-to-date fire flow tests indicating the static and residual pressures in the water mains used for fire service with certified flow volumes at time of test. Tests must be conducted at or near peak demand times of day.
- B. This data must be used in conjunction with Contractor's hydraulic calculations to submit any revised Fire Pump Specifications listing new GPM flow required, head generated, horsepower requirements, etc., for approval by the Commissioner. Include calculations for dynamic (rated) and static (churn) flow conditions.

### PART 2 - PRODUCTS

Not Applicable.

### PART 3 - EXECUTION

#### 3.1 MECHANICAL DEMOLITION

- A. Disconnect, demolish, and remove mechanical systems, equipment, and components indicated to be removed.
  - 1. Piping to be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - 2. Piping to be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - 3. Equipment to be Removed: Disconnect and cap services and remove equipment.
  - 4. Equipment to be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

5. Equipment to be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to City of New York.

B. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

### 3.2 INSTALLATION

A. Coordinate location of piping, sleeves, inserts, hangers, ductwork and equipment. Locate piping, sleeves, inserts, hangers, and equipment clear of windows, doors, openings, light outlets, and other services and utilities. Follow manufacturer's published recommendations for installation methods not otherwise specified.

B. All equipment and materials suitable and rated for system water working pressure.

C. The drawings and information included in this specification are given as a guide only, and they therefore do not relieve this Contractor from providing all work and equipment necessary to complete the installation according to the requirements of Local Building Code, City of New York's Underwriters, N.F.P.A. and all other governing authorities.

D. The arrangement, positions and connections of pipes, drains, valves, etc., shown on the drawings shall be taken as a close approximation and while they shall be followed as closely as possible, the right is reserved by the Commissioner to change the locations, to accommodate any conditions which may arise during the progress of the work without additional compensation to this contractor for such changes, provided that the changes are requested prior to the installation of this Contractor's work. The responsibility for accurately laying out the work rests with this Contractor. Should it be found out that any of his work is so laid out that interferences will occur, he shall also report that to the Commissioner before installation.

E. The Commissioner reserves the right to reject any and all work not in accordance with the approved shop drawing.

F. Whether or not the system shown on the Contract Drawings meets the requirements of the National Fire Protection Association, these specifications require the furnishing and installation of fire protection systems complete in all details and in accordance with local code and the standards of the National Fire Protection Association.

### 3.3 PROTECTION AND CLEANING:

A. Cleaning of Piping System (General)

1. During construction, properly cap, plug and cover all openings in pipe, lines and equipment nozzles so as to prevent the entrance of sand, dirt, and foreign matter. Each system of piping shall be flushed (for the purpose of removing grit, dirt, sand, and foreign matter from the piping), in accordance with NFPA requirements for as long a time as is required to thoroughly clean the systems.

B. Cleaning (General)

1. Upon completion of the work, all equipment shall be thoroughly cleaned, polished and left in first class condition for final acceptance.

3.4 TESTS

A. Testing of Systems

1. Perform all required tests in the manner prescribed by and to the satisfaction of the local building department and local fire department, NFPA, City of New York Insurance Underwriters, and all authorities having jurisdiction. City of New York and Commissioner shall be present to witness tests. Obtain all required certificates of approval and pay any fees or costs in conjunction therewith.
2. Provide and pay for all devices, materials, supplies, labor and power required in connection with all tests. All tests shall be made in the presence and to the satisfaction of the Commissioner and inspectors having jurisdiction.
3. Defects disclosed by the tests shall be repaired, or if required by the Commissioner, defective work shall be replaced with new work without extra charge to the City of New York. Tests shall be repeated as directed, until all work is proven satisfactory.
4. This 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 his own work, and he shall, without extra charge to the City of New York, restore to its original condition, work of the trades so damaged and disturbed, engaging the original Contractors to do the work of restoration.
5. Hydrostatic Tests
  - a. Hydrostatically test all system piping and equipment per NFPA 13, 14 and zone requirements.
  - b. Sprinkler to be tested at 200 psi for 1 hour.

3.5 SITE VISITATION

- A. The contractor shall visit the premises to determine existing conditions and compare same with drawings and specifications and satisfy himself of all conditions prior to the submission of a bid proposal. No allowance will be made for failure to comply with these requirements and a bid proposal shall be construed as evidence he has done so.
- B. This contractor shall provide all required labor, materials, equipment and perform all operations for complete demolition, removal and relocation of the existing work as indicated on the drawings and/or as specified or described and/or as required for the performance of the general work under this contract.
- C. All existing conditions cannot be completely detailed on the drawings. These include, but are not limited to piping, sprinkler heads, equipment, etc. This contractor shall survey the site and include all required changes in making up their bid proposal.

3.6 CONNECTIONS TO EXISTING WORK (AND ALTERATIONS)

- A. Plan installation of new work and connections to existing work to insure minimum interference with regular operation of existing facilities. Submit to the City of New York for approval, date schedule of necessary temporary shut-downs of existing services. All shutdowns shall be made at such times as will not interfere with regular operation of existing facilities and only after written approval of the City of New York. To insure continuous operation, make necessary temporary connections between new and existing work. All costs resulting from temporary shut-downs shall be borne by this Contractor.
- B. Connect new work to existing work in neat and approved manner. Restore existing work disturbed to original condition.
- C. Alteration
  - 1. Provide alteration work for work as shown on drawings or described herein. If asbestos insulation is present or suspected to be present, inform the City of New York in writing so that such removal can be carried out by qualified personnel hired by the City of New York. Do not commence demolition until such work has been completed.
  - 2. All piping from existing equipment that will be removed shall be capped or plugged back at risers, inside hung ceilings, inside walls or slabs or below slabs on grade.
  - 3. Existing exposed piping not to be reused, and not specifically noted or shown on drawing to be abandoned shall be completely removed.
  - 4. Concealed abandoned piping need not be removed, if it does not interfere in any way with the new work.
  - 5. The existing systems shall be left in perfect working order upon completion of all new work.
  - 6. Removed existing piping, equipment, etc., shall not be reused unless otherwise indicated.
  - 7. All existing exposed, unnecessary piping related to work being removed shall be completely removed.
  - 8. Any expense required for shutdowns performed by the municipality shall be paid for by the Contractor.

3.7 PAINTING:

- A. For protective coatings of other equipment such as hangers, etc., refer to that section of the specification wherein construction data is described.
- B. Provide prime coat painting for the following:-
  - 1. Miscellaneous steel and iron provided by this trade.

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2. Hangers and supports.
  3. Damage and Touch-Up: Repair marred and damaged factory painted finishes with materials and procedures to match original factory finishes.
- C. Sprinkler, risers, riser offsets, and cross-connections shall be painted red per N.Y.C. Building Code requirements. All piping required to be painted shall be painted regardless if it is to be concealed.
1. The Fire Protection contractor shall be responsible to coordinate the required painting of piping and valve handles with the painting contractor. The required painting shall be performed under Division 9 or as directed by Construction Managers.
  2. Existing Building Alternations - When during alternations of existing fire protection piping (fire standpipe and or sprinkler piping) that was concealed but is exposed during renovation shall also be painted.
  3. All pipe painting shall be completed prior to any required hydrostatic testing.

END OF SECTION 21 05 00

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## SECTION 21 05 29 - HANGERS AND SUPPORTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes hangers and supports for fire protection system piping.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
  - 1. Division 05, Section 051200 "Structural Steel" for materials for attaching hangers and supports to building structure.
  - 2. Division 21 Section 21 05 00 "Common Work Results for Fire Protection".
  - 3. This Section is a part of each Division 21.
  - 4. Division 21 Section 21 13 13 on "Wet Pipe Sprinkler Systems" for fire-suppression pipe hangers.

#### 1.3 DEFINITIONS

- A. NFPA: National Fire Protection Association
- B. MSS: Manufacturers Standardization Society for the Valve and Fittings Industry.
- C. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."
- D. UL                    Underwriters Laboratories, Inc.  
ANSI                    American National Standards Institute

#### 1.4 GENERAL DESIGN REQUIREMENTS

- A. It shall be understood that the requirements of this section are complementary to requirements delineated elsewhere for the support and fastening of equipment, piping, etc. Nothing on the drawings or specifications shall be interpreted as a reason to waive the requirements of this section.
- B. Ceiling mounted equipment shall be provided with approved mounting devices as required to maintain the equipment in a captive attitude under nominal loads.
- C. The structural attachment design and construction requirements for equipment and piping incorporated as part of Life Safety Systems shall be such that these systems will remain in place and be functional and that the design shall consider lateral drifts between stories as specified by code.

- D. All life safety systems whether isolated or not shall be securely fastened to structure to allow for the required acceleration or nominal load. Bolt points and diameter of inserts shall be submitted and verified as part of the contractor's submission for each piece of equipment and certified by the Commissioner.
- E. For all piping, regardless of size or length of support, all connections to the building structure must be positively made. Connections which depend all or in part on friction for their supporting action are not acceptable.
- F. Do not use branch lines to brace main lines.
- G. Provide pipe sleeves through walls or floors large enough to allow for anticipated differential movements.
- H. Fire sprinkler piping system shall be provided, meeting the requirements of NFPA No. 13, including the seismic provisions included therein. Note that the suggested layouts permit bracing of headers and mains without bracing of branch lines.

#### 1.5 SUBMITTALS

- A. Product Data: For each type of structural attachment, including hangers, support, isolators, restraints and bases as indicated or required.

#### PART 2 - PRODUCTS

##### 2.1 HANGERS AND SUPPORTS:

- A. Piping shall be supported from the building structure in accordance with the standard listed above.
- B. Support hangers from approved concrete inserts where concrete slabs are available.
- C. All hangers, rods, inserts, clamps, stanchions, brackets, shall be dipped in zinc chromite primer before installation or shall be galvanized.
- D. Where "C" clamp hanger attachments are utilized, retainer clips shall be provided on each clamp.
- E. Piping 3" and smaller shall utilize adjustable swivel loop hangers.
- F. Piping 4" and larger shall utilize clevis type hangers only.
- G. All hanger rods shall be double nutted.
- H. Chain straps, perforated bars, wire hangers are not permitted.



## 2.2 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Pipe Hangers:
    - a. Anvil International
    - b. Cooper B-Line; Tolco
    - c. Carpenter & Paterson, Inc.
    - d. National Pipe Hanger Corp.
  2. Powder-Actuated Fastener Systems:
    - a. Hilti, Inc.
    - b. 3 M Corp.
    - c. Specified Technologies, Inc.

## 2.3 FACTORY FINISHES

- A. Manufacturer's standard prime-coat finish ready for field painting.
- B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested equipment before shipping.
1. All hardware shall be electrogalvanized. Hot-dip galvanize metal components for exterior use.

## 2.4 MISCELLANEOUS MATERIALS

- A. Powder-Actuated Drive-Pin Fasteners: Powder-actuated-type, drive-pin attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Anchor Fasteners: Insert-type attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.
- C. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars, black and galvanized.
- D. All hanger rods shall be dipped in zinc chromite primer before installation or shall be galvanized, all hanger rods shall be double nutted.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and equipment to receive attachments for compliance with requirements, installation tolerances, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 HANGER AND SUPPORT APPLICATIONS

- A. Specific hanger requirements are specified in Sections specifying equipment and systems.
- B. Chain straps, perforated bars, wire hangers are not permitted.
- C. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
  - 1. Adjustable Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 4" to NPS 30 (DN100 to DN750).
  - 2. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS ½ to NPS 4 (DN15 to DN100), to allow off-center closure for hanger installation before pipe erection.
  - 3. Adjustable Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS ¾ to NPS 3 (DN20 to DN80).
  - 4. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS ¾ to NPS 8 (DN10 to DN200).
- D. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
  - 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches (150 mm) for heavy loads.
  - 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F (49 to 232 deg C) piping installations.
  - 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
  - 4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
  - 5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F (49 to 232 deg C) piping installations.
- E. Building Attachments: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
  - 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
  - 2. Top-Beam C-Clamps (MSS Type 19) (Provide retainer clip with each C-Clamps): For use under roof installations with bar-joist construction to attach to top flange of structural shape.

3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23) (Provide retainer clip with each C-Clamps): For structural shapes.
7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
11. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:
  - a. Light (MSS Type 31): 750 lb (340 kg).
  - b. Medium (MSS Type 32): 1500 lb (675 kg).
  - c. Heavy (MSS Type 33): 3000 lb (1350 kg).
13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.

### 3.3 HANGER AND SUPPORT INSTALLATION

- A. Pipe Hanger and Support Installation: Comply with local code, NFPA and MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Install building attachments within concrete slabs or attach to structural steel. Space attachments within maximum piping span length indicated in local code, NFPA, and MSS SP-69. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, and expansion joints, and at changes in direction of piping (thrust load). Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

- C. Install powder-actuated drive-pin fasteners in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
  - D. Install mechanical-anchor fasteners in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
  - E. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
  - F. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by local code, NFPA, and ASME B31.9, "Building Services Piping," is not exceeded.
- 3.4 ADJUSTING
- A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

END OF SECTION 21 05 29

## SECTION 21 13 13 - WET-PIPE SPRINKLER SYSTEMS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Pipes, fittings, and specialties.

#### 1.3 DEFINITIONS

- A. Standard-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure of 175 psig (1200 kPa) maximum.

#### 1.4 SYSTEM DESCRIPTIONS

- A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply through alarm valve. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device. Hose connections are included if indicated.

#### 1.5 PERFORMANCE REQUIREMENTS

- A. Standard-Pressure Piping System Component: Listed for 175-psig (1200-kPa) working pressure.
- B. Sprinkler system design shall be approved by authorities having jurisdiction.
  - 1. Margin of Safety for Available Water Flow and Pressure: 10 percent, with 10 psi minimum, including losses through water-service piping, valves, and backflow preventers.
  - 2. Sprinkler Occupancy Hazard Classifications:
    - a. Mechanical Equipment Rooms: Ordinary Hazard, Group 1.
  - 3. Minimum Density for Automatic-Sprinkler Piping Design:
    - a. Ordinary-Hazard, Group 1 Occupancy: 0.15 gpm over 1500-sq. ft. (6.1 mm/min. over 139-sq. m) <Insert value> area.
  - 4. Maximum Protection Area per Sprinkler: Per UL listing and NFPA 13 requirements.

- a. Mechanical Equipment Rooms: 130 sq. ft. (12.1 sq. m) (hydraulically calculated).
- C. Provide all sprinkler heads and work in strict conformance with approved shop drawings. The Commissioner reserves the right to reject any and all work not in accordance with the approved shop drawing.
- D. Whether or not the system shown on the Contract Drawings meets the requirements of the National Fire Protection Association, these specifications require the furnishing and installation of sprinkler systems complete in all details and in accordance with the standards of the National Fire Protection Association.
- E. Perform the following in areas where painting occurs or when sprinkler piping is painted. As soon as sprinkler heads are in place and the Contractor shall cover each head with a small bag of an Underwriter's approved type, which shall be removed only after all painting is complete. After the bag is removed, all heads shall be cleaned and polished.
- F. Hydraulic Calculations: Submit hydraulic calculations as part of the shop drawings. Prepare hydraulic calculations in accordance with NFPA 13 and the design criteria indicated on the drawings with the following exceptions:
  - 1. Minimum operating pressure of any sprinkler head shall be according to NFPA 13 and UL listed or/FM approved.
  - 2. Pipe friction losses may be calculated by using the nearest foot for all piping over one foot in length. Horizontal lengths less than one foot may be neglected. Vertical length less than one foot shall be included for elevation purposes only.
  - 3. Flows shall be calculated to the nearest whole gallon.
  - 4. Velocity pressures may be neglected.

#### 1.6 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For all sprinkler systems. Include plans, elevations, sections, details, and attachments to other work. Comply with NFPA 13 requirements for working plans.
  - 1. Wiring Diagrams: For power, signal, and control wiring.
- C. Qualification Data: For qualified Installer.
- D. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
- E. Fire-hydrant flow test report.

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- F. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."
- G. Field quality-control reports.
- H. Record/As-Built Drawings: Submit record/as-built drawings to the Commissioner for approval. The drawings are to comply with NFPA 13 requirements for record drawings.

#### 1.7 QUALITY ASSURANCE

##### A. Installer Qualifications:

- 1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems. Base calculations on results of fire-hydrant flow test.

##### B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

##### C. NFPA Standards: Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:

- 1. NFPA 13, "Installation of Sprinkler Systems."

##### D. Systems, installation, equipment and materials shall conform to requirements of the local Building Code, City of New York's Insurance Underwriters, Factory Mutual, Industrial Risk Insurers, local Fire Department, ANSI/ASME B31.9 "Building Service Piping" and all authorities having jurisdiction. Equipment and materials Underwriters listed, labeled and approved as required.

#### 1.8 PROJECT CONDITIONS

##### A. Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by City of New York's or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:

- 1. Notify Construction Manager, and Commissioner no fewer than two days in advance of proposed interruption of sprinkler service.
- 2. Do not proceed with interruption of sprinkler service without Construction Manager's, and City of New York's written permission.

#### 1.9 COORDINATION

- A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

1.10 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Sprinkler Cabinets: Finished, wall-mounted, steel cabinet with hinged cover, and with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler used on Project.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes. All pipe shall be manufactured domestically.

2.2 STEEL PIPE AND FITTINGS

- A. Standard Weight, Black-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. Pipe ends may be factory or field formed to match joining method.
- B. Schedule 10, Black-Steel Pipe: ASTM A 135 or ASTM A 795/A 795M, Schedule 10 in NPS 5 (DN 125) and smaller.
- C. Malleable- or Ductile-Iron Unions: UL 860.
- D. Grooved-Joint, Steel-Pipe Appurtenances:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Anvil International, Inc.
    - b. Tyco Fire & Building Products LP.
    - c. Victaulic Company.
    - d. Reliable.
  2. Pressure Rating: 175 psig (1200 kPa), or greater as required for project conditions.
  3. Galvanized and Uncoated, Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.



4. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.
- E. Mechanical victaulic type joint
1. For steel pipe victaulic type 77, 75, 72 and zero flex are the only approved coupling to be used with grooved piping. Couplings shall be galvanized when used with galvanized piping. All grooves on piping that is galvanized shall be properly cleaned and provided with zinc chromate primer. See pipe material schedule.
- F. Steel Pressure-Seal Fittings: UL 213, UL listed and/or FM-approved, 175-psig (1200-kPa) pressure rating, or greater as required for project conditions with steel housing, rubber O-rings, and pipe stop; for use with fitting manufacturers' pressure-seal tools.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Victaulic Company.
    - b. Anvil International, Inc.
    - c. Tyco Fire & Building Products

## 2.3 SPRINKLER SPECIALTY PIPE FITTINGS

### A. Branch Outlet Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Anvil International, Inc.
  - b. Tyco Fire & Building Products
  - c. Victaulic Company.
2. Standard: UL 213.
3. Pressure Rating: 175 psig (1200 kPa) minimum, or greater as required for project conditions.
4. Body Material: Ductile-iron housing with EPDM seals and bolts and nuts.
5. Type: Mechanical-T and -cross fittings.
6. Configurations: Snap-on and strapless, ductile-iron housing with branch outlets.

7. Size: Of dimension to fit onto sprinkler main and with outlet connections as required to match connected branch piping.
8. Branch Outlets: Grooved, plain-end pipe, or threaded.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations required in "Quality Assurance" Article.
- B. Report test results promptly and in writing.

#### 3.2 PIPING INSTALLATION

- A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.
  1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Commissioner before deviating from approved working plans.
- B. Piping Standard: Comply with requirements for installation of sprinkler piping in NFPA 13.
- C. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- D. Install unions adjacent to each valve in pipes NPS 2 (DN 50) and smaller.
- E. Install sprinkler piping with drains for complete system drainage.
- F. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13.
- G. Fill sprinkler system piping with water.

#### 3.3 JOINT CONSTRUCTION

- A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.
- B. Install unions adjacent to each valve in pipes NPS 2 (DN 50) and smaller.
- C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 (DN 65) and larger end connections.

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- D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- G. Steel-Piping, Pressure-Sealed Joints: Join lightwall steel pipe and steel pressure-seal fittings with tools recommended by fitting manufacturer.
- H. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.

### 3.4 IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

### 3.5 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
  - 1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
  - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
  - 3. Flush, test, and inspect sprinkler systems in accordance with to NFPA 13 requirements.
  - 4. Energize circuits to electrical equipment and devices.
  - 5. Coordinate with fire-alarm tests. Operate as required.
- C. Sprinkler piping system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

### 3.6 CLEANING

- A. Clean dirt and debris from sprinklers.

- B. Remove and replace sprinklers with paint other than factory finish.

### 3.7 PIPING SCHEDULE

- A. Wet-pipe sprinkler systems, NPS 2 (DN 50) and smaller, shall be one of the following:
  - 1. Standard-weight, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.
  - 2. Standard-weight, black-steel pipe with roll-grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
- B. Wet-pipe sprinkler systems, NPS 2-1/2 and larger (DN 65 and larger), shall be one of the following:
  - 1. Standard-weight, black-steel pipe with roll-grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.

END OF SECTION 211313

## SECTION 22 05 00- COMMON WORK RESULTS FOR PLUMBING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Work Included:

1. The system shall include but not limited to the following: All plumbing fixtures and accessories, piping, fittings, valves, strainers, pumps, water distribution, gas distribution, water heaters, storm and sanitary and laboratory drainage, sanitary and laboratory vents, interceptors, gages, thermometers, thermometers, equipment and piping identification.

##### B. This Section includes the following:

1. Piping materials and installation instructions common to most piping systems.
2. Dielectric fittings.
3. Mechanical sleeve seals.
4. Sleeves.
5. Escutcheons.

#### 1.2 RELATED DOCUMENTS

- ##### A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### B. Related Work include the following:

1. Division 07, Section 07 84 13, "Firestopping".
2. This section is a part of each Division 22.

#### 1.3 CODES, PERMITS AND INSPECTIONS

- ##### A. All work shall meet or exceed the latest requirements of all national, state, county, municipal and other authorities exercising jurisdiction over construction work at the project.
- ##### B. All required permits, approval and inspection certificates shall be obtained, paid for, and made available at the completion of the work, by the Plumbing Contractor.
- ##### C. Installation procedures, methods, and conditions shall comply with the latest requirements of The Federal Occupational Safety and Health Act (OSHA).
- ##### D. Prepare and submit to the building department a set of "as-built" record drawings for approval, in a form acceptable to the building department.

- E. The Contractor shall be responsible for the installation and filing until the installation has been approved by the authorities having such jurisdiction.
- F. All equipment shall comply with "Materials & Equipment Acceptance Division" of N.Y.C. and Board of Standards and Appeals and/or the Advisory Board of the Bureau of Gas and Electricity and the Office of Technical Certification and Research as applicable. Filing and approvals of such equipment shall be the responsibility of this trade. If equipment is substituted for manufacturers model numbers shown on the contract documents and filed with the building department and/or Advisory Board, this trade shall have the responsibility of preparing the filing amendments with the Building Department. Application for Use Permits shall be filed by this trade.
- G. Prepare and submit to the Commissioner a set of "as-built" record drawings for approval, in a form acceptable to the Commissioner.
- H. The Contractor shall be responsible for the installation and filing until the installation has been approved by the authorities having such jurisdiction.

#### 1.4 GUARANTEES AND CERTIFICATIONS

- A. All work shall be guaranteed to be free from leaks and defects. Any defective materials or workmanship, as well as damage to the work of all trades resulting from same, shall be replaced or repaired as directed for the duration of stipulated guaranteed periods.
- B. The duration of guarantee periods following the date of beneficial use of the system shall be one year. Beneficial use is defined as operation of the system to obtain its intended use.
- C. The date of acceptance shall be the date of the final payment for the work or the date of a formal notice of acceptance, whichever is earlier.
- D. Non-durable replaceable items, such as water filter media, do not require replacement after the date of acceptance. If received in writing, requests to have earlier acceptance dates established for these items will be honored.
- E. Certification shall be submitted attesting to the fact that specified performance criteria are met by all items of plumbing equipment.

#### 1.5 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspace, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- F. Piping: Pipe, fittings, flanges, valves, controls, hangers, drains, insulation, and items customarily required in connection with the transfer of fluids.
- G. By Other Trades: By persons or parties responsible for work at the project other than the party or parties who have been duly awarded the contract for the work of this Trade. In the event that this document is used to acquire work as part of a general construction contract the words "by other trades" shall mean by persons or parties who are not anticipated to be the sub-contractor for this trade working together with the general contractor. In this context the words "by other trades" shall not be interpreted to mean not included in the overall contract.

#### 1.6 SUBMITTALS

- A. In accordance with Division 01, SUBMITTAL PROCEDURES, furnish the following:
- B. Documents will not be accepted for review unless:
  - 1. They are submitted as a package where they pertain to related items.
  - 2. They are properly marked with service or function, project name, where they consist of catalog sheets displaying other items which are not applicable.
  - 3. They indicate the project name and address along with the Contractor's name, address and phone number.
  - 4. They are properly marked with external connection identification as related to the project where they consist of standard factory assembly or field installation drawings.
- C. Explanation of Shop Drawing Stamp
  - 1. Reviewed - No Exception Taken: indicates that we have not found any reason why this item should not be acceptable within the intent of the contract documents.
  - 2. Exception Taken As Noted: indicates that we have found questionable components which if corrected or otherwise explained make the product acceptable.
  - 3. Revised and Resubmit: indicates that this item should be resubmitted for review before further processing.
  - 4. Resubmit Specified Item: indicates that the item will not meet the intent of the Contract.
  - 5. Incomplete - Resubmit: Indicates that the submission is not complete and ready for review by the Commissioner.

6. No shop drawing stamp or note shall constitute an order to fabricate or ship. Such notification can only be performed by the Project Manager for Construction, the Contractor scheduling his own work, or the City of New York.
7. The Contractor is responsible for having "Reviewed" copies of shop drawings bearing the Reviewed - No Exception Taken stamp of the Commissioner are kept on the job site and work is implemented in the field in accordance with these documents.
8. Where information from one Contractor is required by another contractor, it is the responsibility of the contractors to exchange information and coordinate their work.

D. Product Data: For the following:

1. Transition fittings.
2. Dielectric fittings.
3. Mechanical sleeve seals.
4. Escutcheons.

1.7 DELIVERY, STORAGE, HANDLING AND PROTECTION

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- B. This trade shall be responsible for its work and equipment until finally inspected, tested and accepted. Carefully store materials and equipment which are not immediately installed after delivery to site. Close open ends of work with temporary covers or plugs during construction to prevent entry of obstructing material.
- C. This trade shall protect work and material of other trades from damage that might be caused by its work or workmen and make good damage thus caused.

1.8 COORDINATION

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for mechanical installations.

Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

B. Record Drawings

1. As part of the required plumbing work, a complete set of "as-built" or record drawings shall be made up and delivered to the Commissioner.
2. The drawings shall show:-



- a. All work installed exactly in accordance with the original design.
  - b. All installed as a modification or addition to the original design.
  - c. The dimensional information necessary to delineate the exact location of all piping runs which are so concealed as to be untraceable by inspection through the regular means of access established for inspection and maintenance.
3. The record drawings shall be of legible reproducible and durable type.
  4. The Contractor shall make arrangements with the Commissioner to obtain design drawings on compact diskettes in AutoCad format for use as a basis for the "as-built" drawings.
  5. Prior to developing any "as-built" drawings, the contractor shall coordinate with the City of New York and the Commissioner the drawing layers, colors, etc., of the CAD drawings.
  6. "As-built" information shall be submitted as follows:
    - a. Drawing files on compact diskettes in AutoCad format.
    - b. One (1) set of reproducible drawings.
    - c. Two (2) sets of plots.
  7. The quantity of design drawings which are made available shall in no way be interpreted as setting a limit to the number of drawings necessary to show the required "as-built" information.
  8. Progress prints of record drawings shall be submitted monthly during the construction period for Commissioner's approval.
  9. This trade shall submit the "as-built" set for approval by the Commissioner in a form acceptable to the Commissioner.

Final acceptance of the fire protection systems by the authority having jurisdiction will not be implemented until "as-built" drawings are on site.

#### 1.9 INTERPRETATION OF THE DRAWINGS AND SPECIFICATIONS

- A. As used in the drawings and specifications, certain non technical words shall be understood to have specific meanings as follows:
  1. "Furnish"-----Purchase and deliver to the project site complete with every necessary appurtenance and support.
  2. "Install"-----Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project.

3. "Provide"-----"Furnish" and "Install".

- B. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any item, in the drawings or specifications or both, carries with it the instruction to furnish and install the item, regardless of whether or not this instruction is explicitly stated as part of the indication or description.
- C. It shall be understood that the specifications and drawings are complementary and are to be taken together for a complete interpretation of the work. Where there are conflicts between the drawings and specifications or within the specifications or drawings themselves, the items of higher standard shall govern.
- D. No exclusions from, or limitations, in the language used in the drawings or specifications shall be interpreted as meaning that the appurtenances or accessories necessary to complete any required system or item of equipment are to be omitted.
- E. The drawings of necessity utilize symbols and schematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installations. The work shall be installed, in accordance with the diagrammatic intent expressed on the drawings, and in conformity with the dimensions indicated on final architectural and structural working drawings and on equipment shop drawings.
- F. No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete work are excluded.
- G. Certain details appear on the drawings which are specific with regard to the dimensioning and positioning of the work. These details are intended only for the purpose of establishing general feasibility. They do not obviate field coordination for the indicated work.
- H. Information as to the general construction shall be derived from structural and architectural drawings and specifications only.
- I. The use of words in the singular shall not be considered as limiting where other indications denote that more than one item is referred to.
- J. In the event that extra work is authorized, and performed by this trade, work shown on drawings depicting such work, and/or described by Bulletin is subject to the base building specifications in all respects.

1.10 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

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Reference	Definition
ASTM	American Society for Testing Materials
ASPE	American Society of Plumbing Engineers
NFPA	National Fire Protection Association
UL	Underwriters Laboratories, Inc.
NEMA	National Electrical Manufacturers Assn.
FM	Factory Mutual
USAS	United States of America Standards Institute
ANSI	American National Standards Institute
AWWA	American Water Works Association
F.S.	Federal Specifications, US Government
I.S.O.	Insurance Services Organization
C.S.	Commercial Standards issued by the United States Department of Commerce.
M.S.S.	Manufacturers Standardization Society of the Valve and Fittings Industry
A.G.A.	American Gas Association, Inc.
A.S.H.R.A.E.	American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.
P.D.I.	Plumbing and Drainage Institute
N.S.F.	National Sanitation Foundation
A.S.S.E.	American Society of Sanitary Engineering
I.A.P.M.O.	International Association of Plumbing and Mechanical Officials
C.I.S.P.I.	Cast Iron Soil Pipe Institute
A.A.S.H.O.	American Association of State Highway Officials
NYCBS & A	New York City Board of Standards and Appeals

#### 1.11 GUARANTEES AND CERTIFICATIONS

- A. All work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from same shall be replaced or repaired as directed for the duration of stipulated guaranteed periods.
- B. The duration of guarantee periods following the date of beneficial use of the system shall be one year. Beneficial use is defined as operation of the system to obtain its intended use.
- C. The date of acceptance shall be the date of the final payment for the work or the date of a formal notice of acceptance, whichever is earlier.
- D. Certification shall be submitted attesting to the fact that specified performance criteria are met by all items of Plumbing equipment.

#### 1.12 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Before submitting prices or beginning work, thoroughly examine the site and the Contract Documents.
- B. No claim for extra compensation will be recognized if difficulties are encountered which examination of site conditions and Contract Documents prior to executing Contract would have revealed.

#### 1.13 WORKMANSHIP

- A. The entire work provide in this Specification shall be constructed and finished in every aspect in a workmanlike and substantial manner.
- B. It is not intended that the Drawings shall show every pipe, fitting and appliance. Plumbing Contractor shall furnish and install all such parts as may be necessary to complete the systems in accordance with the best trade practice.
- C. Keep other trades fully informed as to shape, size and position of all openings required for apparatus and give full information to the General Contractor and other trades in a timely manner so that all opening may be built in advance. Furnish and install all sleeves, supports and the like as specified or as required.
- D. In case of failure on the part of the Plumbing Contractor to give proper and timely information as required above, he shall do his own cutting and patching or have same done by the General Contractor, but in any case, without extra expense to the City of New York.
- E. Obtain detailed information from the manufacturers of apparatus as to the proper method of installing and connecting same. Obtain all information from the General Contractor and other trades which may be necessary to facilitate work and completion of the whole project.

1.14 CONTINUITY OF SERVICES

- A. Do not interrupt existing services without Commissioner's approval.
- B. Schedule interruptions in advance, according to Commissioner's instructions. Submit, in writing, with request for interruption, methods proposed to minimize impact on City of New York operations. Interruptions shall also be coordinated with the local fire department.
- C. Interruptions shall be scheduled at such times of day and work to minimize impact on City of New York operations.

1.15 QUALITY ASSURANCE:

A. Products Criteria

- 1. All equipment furnished as part of the work shall comply with the latest editions of all applicable state and municipal "energy codes." Provide certification from the equipment suppliers for all energy-consuming equipment that the equipment fully complies with these codes. Equipment submissions will not be accepted for review unless accompanied by such certification in writing.
- 2. All equipment and materials shall be new and without blemish or defect.
- 3. New equipment and materials shall be Underwriters Laboratories, Inc. (U.L.) labeled and/or listed where specifically called for or where normally subject to such U.L. labeling and/or listing services.
- 4. Asbestos
  - a. All equipment and materials shall be free of asbestos.
- 5. It is the intent of these specifications that wherever a manufacturer of a product is specified, and the terms "other approved" or "or approved equal" or "equal" are used, the substituted item must conform in all respects to the specified item. Consideration will not be given to claims that the substituted item meets the performance requirements with lesser construction (such as lesser heat exchange surface, etc.). Performance as delineated in schedules and in the specifications shall be interpreted as minimum performance. In many cases equipment is oversized to allow for pick-up loads which cannot be delineated under the minimum performance.
- 6. All equipment of one type such as drains, pumps, fixtures, etc. shall be the products of one Manufacturer.
- 7. Substituted equipment or optional equipment where permitted and approved, must conform to space requirements. Any substituted equipment that cannot meet space requirements, whether approved or not, shall be replaced at the Contractor's expense. Any modifications of related systems as a result of substitutions shall be made at the Contractor's expense.

8. Note that the approval of shop drawings, or other information submitted in accordance with the requirements hereinbefore specified, does not assure that the Commissioner, attests to the dimensional accuracy or dimensional suitability of the material or equipment involved or the ability of the material or equipment involved or the mechanical performance of equipment. Approval of Shop Drawings does not invalidate the plans and specifications if in conflict, unless a letter requesting such change is submitted and approved on the Commissioner's letterhead.
9. Substitutions of equipment for that shown on the schedules or designated by model number in the specifications will not be considered if the item is not a regular cataloged item shown in the current catalog of the manufacturer.
10. Prohibition of Lead
  - a. The presence and use of lead is strictly prohibited in potable water systems.
  - b. Potable water shall not be subject to contact with lead in any form.
  - c. The design and manufacture of all materials and equipment (piping, fittings, joints, connections, solders, fixtures, accessories, etc.) provided, shall not contain lead in any form.
  - d. Contractor shall be responsible for all costs involved in testing and certifying that potable water systems, materials and equipment are lead free.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

### 2.2 PIPE, TUBE, AND FITTINGS

- A. Refer to individual piping Sections of this Division for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

### 2.3 JOINING MATERIALS

- A. Refer to individual piping Sections of this Division for special joining materials not listed below.

- B. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

#### 2.4 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig (1725-kPa) minimum working pressure at 180 deg F (82 deg C).
  - 1. Manufacturers:
    - a. Watts Industries, Inc.; Water Products Div.
    - b. Zurn Industries, Inc.; Wilkins Div.
    - c. Hart International, Inc.

#### 2.5 MECHANICAL SLEEVE SEALS

- A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
  - 1. Manufacturers:
    - a. Advance Products & Systems, Inc.
    - b. Metraflex Co.
  - 2. Sealing Elements: NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
  - 3. Pressure Plates: Stainless steel. Include two for each sealing element.
  - 4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

#### 2.6 SLEEVES

- A. General
  - 1. Provide sleeves for each pipe passing through walls, partitions, floors, and roofs.
- B. Galvanized-Steel Sheet: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.
- C. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

**D. Sleeve Materials**

Type Designation

- |   |  |
|---|--|
| 1 | Galvanized steel sheet.  |
| 2 | Standard weight galvanized steel pipe.   |
| 3 | Standard weight galvanized steel pipe 1/4" steel plate extending from outside of sleeve a minimum of 2" all around, similar to F&S Mfg. Corp. Fig. 204.                        |
| 4 | Cast iron pipe sleeve with center flange, similar to James B. Clow & Sons No. F-1430 and F-1435.   |
| 5 | Standard weight galvanized steel pipe with flashing clamp device welded to pipe sleeve or watertight sleeves, similar to Zurn 195-10 with oakum and lead caulking as required. |
| 6 | Metal deck and wall sleeves. Similar to Adjust-to-Crete Manuf., Co.  |

**E. Sleeve Sizes**

1. Floors and required fire rated partitions - 1/2" maximum clearance between outside of pipe (or insulation on insulated pipes) and inside of sleeve.
2. Partitions not fire rated - 1-1/2" maximum clearance between outside of pipe (or insulation on insulated pipes) and inside of sleeve.

**F. Sleeve Lengths**

Location	Sleeve Length
Floors	Equal to depth of floor construction including finish. In waterproof floor construction sleeves to extend minimum of 2" above finished floor level.
Roofs	Equal to depth of roof construction including insulation.
Walls & Partitions	Equal to depth of construction and terminated flush with finished surfaces.

**G. Sleeve Caulking & Packing**

Type Designation      Caulking & Packing Requirements

- |   |   |
|---|---|
| A | Space between pipe and sleeve packed with oakum or hemp and caulked watertight with lead. |
|---|---|



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- B Space between pipe or pipe covering and sleeve shall be caulked with an incombustible permanently plastic, waterproof non-staining smooth appearance or pack with mineral wool or other equally approved fire resistive material to within 1/2" of both wall faces and provide caulking compound as per above.

H. Sleeve Application

Sleeve Type Thru Required Fire Rated Construction	Sleeve Type Thru Non-Fire Rated Construction	Location	Sleeve Caulking & Packing Type Designation	Sleeve Caulking & Packing Type Thru Fire Rated Construction
5	5	Membrane waterproof floor, roof & wall construction.	B	B
5	5	Non-membrane waterproof floor, roof & wall construction where flashing is required.	A or B	B
2	1, 2	Interior walls, partitions & floors.	B	B
3 or 4	3 or 4	Exterior walls.	A	A
2	6	Cellular metal deck floors.	B	B
1	1	Precast concrete floor with poured concrete topping. Note: Sleeves to have flat flanges and/or guides which rest on top of precast slab.	B	B

2.7 ESCUTCHEONS

- A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.
- C. One-Piece, Cast-Brass Type: With set screw.
1. Finish: Polished chrome-plated.

- D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
  - 1. Finish: Polished chrome-plated.
- E. One-Piece, Stamped-Steel Type: With set screw or spring clips and chrome-plated finish.
- F. Split-Plate, Stamped-Steel Type: With exposed-rivet hinge, set screw or spring clips, and chrome-plated finish.
- G. One-Piece, Floor-Plate Type: Cast-iron floor plate.
- H. Split-Casting, Floor-Plate Type: Cast brass with concealed hinge and set screw.

## 2.8 FIRESTOPPING

- A. In addition to fire protection means specified elsewhere in this specification, this trade shall comply with the following.
- B. All spaces between pipes and their respective sleeves shall be packed full depth with mineral wool, or other equally fire resistant material, and compressed firmly in place. Fiberglass shall not be used. Sleeve clearances shall not exceed  $\frac{1}{2}$  inch between pipes and sleeves. Use individual sleeves for each pipe or duct. Before escutcheons are attached caulking must be available for inspection and notification should be made.
- C. Fire Stopping material and installed configuration shall maintain the fire rating of the penetrated wall, floor or ceiling.
- D. All pipe penetrations requiring Fire Stopping shall be "UL" approved thru-wall fire stop assemblies.
- E. Fire stop assemblies shall be Rectorseal, 3M, Hilti, Tremco or approved equal.
- F. Contractor shall provide assembly for each type of pipe material thru fire-rated wall thickness.
- G. Fire Stopping assemblies shall be approved by the authority having jurisdiction.

## PART 3 - EXECUTION

### 3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. Install piping according to the following requirements and Sections of this Division specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

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- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Select system components with pressure rating equal to or greater than system operating pressure.
- K. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:
  - 1. New Piping:
    - a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
    - b. Insulated Piping: One-piece, stamped-steel type with spring clips.
    - c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    - d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type.
    - e. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece or split-casting, cast-brass type with polished chrome-plated finish.
    - f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge and set screw.
    - g. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    - h. Bare Piping in Unfinished Service Spaces: One-piece, stamped-steel type with concealed or exposed-rivet hinge and set screw or spring clips.
    - i. Bare Piping in Equipment Rooms: One-piece, cast-brass type.

- j. Bare Piping in Equipment Rooms: One-piece, stamped-steel type with set screw or spring clips.
  - k. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.
- L. Sleeves are not required for core-drilled holes.
- M. Install sleeves for pipes passing through poured concrete and masonry walls, gypsum-board partitions, and poured concrete floor and roof slabs.
- 1. Cut sleeves to length for mounting flush with both surfaces.
    - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches (50 mm) above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
  - 2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
  - 3. Install sleeves that are large enough to provide 1/4-inch (6.4-mm) annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
    - a. Steel or Pipe Sleeves: For pipes smaller than NPS 6 (DN 150).
    - b. Steel Sheet Sleeves: For pipes NPS 6 (DN 150) and larger, penetrating gypsum-board partitions.
  - 4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 07 Section 078413 "Firestopping" for materials and installation.
- N. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- 1. Install steel pipe for sleeves smaller than 6 inches (150 mm) in diameter.
  - 2. Install cast-iron "wall pipes" for sleeves 6 inches (150 mm) and larger in diameter.
  - 3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

- O. **Underground, Exterior-Wall Pipe Penetrations:** Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
  - 1. **Mechanical Sleeve Seal Installation:** Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- P. **Fire-Barrier Penetrations:** Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 07 Section 078413 "Firestopping" for materials.
- Q. Verify final equipment locations for roughing-in.
- R. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.
- S. No installation shall be permitted which blocks or otherwise impedes access to any existing machine or system. Except as otherwise indicated, emergency switches and alarms shall be installed in conspicuous locations. All indicators, to include gauges, meters, and alarms shall be mounted in order to be easily visible by people in the area.

### 3.2 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Sections of this Division specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. **Soldered Joints:** Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. **Threaded Joints:** Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  - 2. **Damaged Threads:** Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

### 3.3 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
  2. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
  3. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

### 3.4 TESTS

- A. Provide all designating signs for shutoff valves, control valves, alarms, and the like, as required by the agencies having jurisdiction.
- B. Testing of Systems
1. Perform all required tests in the manner prescribed by and to the satisfaction of the local building department and local plumbing inspector, City of New York Insurance Underwriters, and all authorities having jurisdiction. Commissioner's shall be present to inspect tests. Obtain all required certificates of approval and pay any fees or costs in conjunction therewith.
  2. Provide and pay for all devices, materials, supplies, labor and power required in connection with all tests. All tests shall be made in the presence and to the satisfaction of the Commissioner and inspectors having jurisdiction.
  3. Defects disclosed by the tests shall be repaired, or if required by the Commissioner, defective work shall be replaced with new work without extra charge to the City of New York. Tests shall be repeated as directed, until all work is proven satisfactory.
  4. This 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 his own work, and he shall, without extra charge to the City of New York, restore to its original condition, work of the trades so damaged and disturbed, engaging the original Contractors to do the work of restoration.

### 3.5 INSTALLATION

- A. Coordinate location of piping, sleeves, inserts, hangers and equipment. Locate piping, sleeves, inserts, hangers, and equipment clear of windows, doors, openings, light outlets, and other services and utilities. Follow manufacturer's published recommendations for installation methods not otherwise specified.

### 3.6 PROTECTION AND CLEANING

#### A. Cleaning of Piping System (General)

1. During construction, properly cap, plug and cover all openings in pipe, lines and equipment nozzles so as to prevent the entrance of sand, dirt, and foreign matter. Each system of piping shall be flushed (for the purpose of removing grit, dirt, sand, and foreign matter from the piping), for as long a time as is required to thoroughly clean the systems.

### 3.7 SITE VISITATION

- A. The plumbing contractor shall visit the premises to determine existing conditions and compare same with drawings and specifications and satisfy himself of all conditions prior to the submission of a bid proposal. No allowance will be made for failure to comply with these requirements and a bid proposal shall be construed as evidence he has done so.
- B. This plumbing contractor shall provide all required labor, materials, equipment and perform all operations for complete demolition, removal and relocation of the existing work as indicated on the drawings and/or as specified or described and/or as required for the performance of the general work under this contract.
- C. All existing conditions cannot be completely detailed on the drawings. These include, but are not limited to piping fixtures, equipment, etc. The plumbing contractor shall survey the site and include all required changes in making up their bid proposal.

### 3.8 CONNECTIONS TO EXISTING WORK (AND ALTERATIONS)

- A. Plan installation of new work and connections to existing work to insure minimum interference with regular operation of existing facilities. Submit to the Commissioner for approval, date schedule of necessary temporary shut-downs of existing services. All shutdowns shall be made at such times as will not interfere with regular operation of existing facilities and only after written approval of the Commissioner. To insure continuous operation, make necessary temporary connections between new and existing work. All costs resulting from temporary shut-downs shall be borne by this Contractor.
- B. Connect new work to existing work in neat and approved manner. Restore existing work disturbed to original condition.
- C. Alteration
  1. Provide alteration work for work as shown on drawings or described herein. If asbestos insulation is present or suspected to be present, inform the City of New York in writing so that such removal can be carried out by qualified personnel hired by the City of New York. Do not commence demolition until such work has been completed.
  2. In no case on sanitary piping shall dead end runs remain.
  3. Existing exposed piping not to be reused, and not specifically noted or shown on drawing to be abandoned shall be completely removed.

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4. Concealed abandoned piping need not be removed, if it does not interfere in any way with the new work.
5. The existing systems shall be left in perfect working order upon completion of all new work.
6. Removed existing piping, fixtures, etc., shall not be reused unless otherwise indicated.
7. All existing exposed, unnecessary piping related to work being removed shall be completely removed.
8. Any expense required for shutdowns performed by the municipality shall be paid for by the Contractor.

3.9 EXCAVATION AND BACKFILL

- A. All excavation and backfill will be done by General Contractor. The Plumbing Contractor shall be responsible for the coordination of trench routing, slope and elevation.

END OF SECTION 22 05 00



## SECTION 22 05 43 - HANGERS, SUPPORTS, ANCHORS AND GUIDES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes hangers and supports for mechanical system piping and equipment.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
  - 1. Division 22 Section 22 05 00 "Common Work Results for Plumbing".
  - 2. This section is a part of each Division 22.

#### 1.3 DEFINITIONS

- A. MSS: Manufacturers Standardization Society for the Valve and Fittings Industry.
- B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

#### 1.4 SUBMITTALS

- A. Product Data: For each type of pipe hanger, channel support system component, and thermal-hanger shield insert indicated.

### PART 2- PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Pipe Hangers:
    - a. Anvil International
    - b. Cooper B-Line
    - c. Carpenter & Paterson, Inc.
    - d. National Pipe Hanger Corp.

2. Powder-Actuated Fastener Systems:

- a. Hilti, Inc.
- b. ITW Ramset/Red Head.

2.2 MISCELLANEOUS MATERIALS

- A. Powder-Actuated Drive-Pin Fasteners: Powder-actuated-type, drive-pin attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Anchor Fasteners: Insert-type attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.

PART 3- EXECUTION

3.1 HANGER AND SUPPORT APPLICATIONS

- A. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Specification Sections.
- B. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
  - 1. Adjustable Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS ½ to NPS 30 (DN15 to DN750).
  - 2. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS ½ to NPS 24 (DN15 to DN600), if little or no insulation is required.
  - 3. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS ½ to NPS 4 (DN15 to DN100), to allow off-center closure for hanger installation before pipe erection.
  - 4. Adjustable Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS ¾ to NPS 8 (DN20 to DN200).
  - 5. Adjustable Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS ½ to NPS 8 (DN15 to DN200).
  - 6. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS ½ to NPS 8 (DN15 to DN200).
  - 7. Adjustable Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS ½ to NPS 2 (DN15 to DN50).
  - 8. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS ¾ to NPS 8 (DN10 to DN200).

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9. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 3 (DN10 to DN80).
  10. U-Bolts (MSS Type 24): For support of heavy pipe, NPS 1/2 to NPS 30 (DN15 to DN750).
  11. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
- C. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20 (DN20 to DN500).
  2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20 (DN20 to DN500), if longer ends are required for riser clamps.
- D. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches (150 mm) for heavy loads.
  2. Steel Clevises (MSS Type 14): For 120 to 450 deg F (49 to 232 deg C) piping installations.
  3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
  4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
  5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F (49 to 232 deg C) piping installations.
- E. Building Attachments: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
  2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joint construction to attach to top flange of structural shape.
  3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
  4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.

5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
  6. C-Clamps (MSS Type 23): For structural shapes.
  7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
  8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
  9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
  10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
  11. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
- F. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
1. Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
  2. Protection Shields (MSS Type 40): Of length recommended by manufacturer to prevent crushing insulation.
  3. Thermal-Hanger Shield Inserts: For supporting insulated pipe, 360-degree insert of high-density, 100-psi (690-kPa) minimum compressive-strength, water-repellent-treated calcium silicate or cellular-glass pipe insulation, same thickness as adjoining insulation with vapor barrier and encased in 360-degree sheet metal shield.

### 3.2 HANGER AND SUPPORT INSTALLATION

- A. See respective plumbing system sections.

### 3.3 HANGER AND SUPPORT INSTALLATION

- A. Pipe Hanger and Support Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Install building attachments within concrete slabs or attach to structural steel. Space attachments within maximum piping span length indicated in MSS SP-69. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, and expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

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- C. Install powder-actuated drive-pin fasteners in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
- D. Install mechanical-anchor fasteners in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- E. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- F. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9, "Building Services Piping," is not exceeded.
- G. Chain straps, perforated bars, wire hangers, plastic wire ties or expansion shields are not permitted. Branch piping to fixture in pipe spaces shall be supported by using Sumner supports, Kindorf or B-Line supports. This contractor shall provide supports on a few typical installations for approval before proceeding with the entire installation (wire for supports is prohibited).
- H. Insulated Piping: Comply with the following:
  - 1. Attach clamps and spacers to piping.
    - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
    - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
    - c. Do not exceed pipe stress limits according to ASME B31.9.
  - 2. Install MSS SP-58, Type 39 protection saddles, if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
    - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN100) and larger if pipe is installed on rollers.
  - 3. Install MSS SP-58, Type 40 protective shields on cold piping with vapor barrier. Shields shall span arc of 180 degrees.
    - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN100) and larger if pipe is installed on rollers.
  - 4. Shield Dimensions for Pipe: Not less than the following:
    - a. NPS 1/4 to NPS 3-1/2 (DN8 to DN90): 12 inches (305 mm) long and 0.048 inch (1.22 mm) thick.

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5. Insert Material: Length at least as long as protective shield.
6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

END OF SECTION 22 05 43

## SECTION 22 05 53 - IDENTIFICATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following mechanical identification materials and their installation:

1. Pipe markers.
2. Valve tags.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 22 05 00 "Common Work Results for Plumbing".
- C. This section is a part of each Division 22 section.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.

#### 1.4 QUALITY ASSURANCE

- A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

### PART 2 - PRODUCTS

#### 2.1 PIPING IDENTIFICATION DEVICES

- A. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction of flow.
1. Colors: Comply with ASME A13.1, unless otherwise indicated.
  2. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
  3. Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): Full-band pipe markers extending 360 degrees around pipe at each location.
  4. Arrows: Integral with piping system service lettering to accommodate both directions; or as separate unit on each pipe marker to indicate direction of flow.

- B. Pretensioned Pipe Markers: Precoiled semirigid plastic formed to cover full circumference of pipe and to attach to pipe without adhesive.
- C. Shaped Pipe Markers: Preformed semirigid plastic formed to partially cover circumference of pipe and to attach to pipe with mechanical fasteners that do not penetrate insulation vapor barrier.
- D. Self-Adhesive Pipe Markers: Plastic with pressure-sensitive, permanent-type, self-adhesive back.
- E. Plastic Tape: Continuously printed, vinyl tape at least 3 mils (0.08 mm) thick with pressure-sensitive, permanent-type, self-adhesive back.
  - 1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): 3/4 inch (19 mm) minimum.
  - 2. Width for Markers on Pipes with OD, Including Insulation, 6 Inches (150 mm) or Larger: 1-1/2 inches (38 mm) minimum.

## 2.2 VALVE TAGS

- A. Valve Tags: Stamped or engraved with 1/4-inch (6.4-mm) letters for piping system abbreviation and 1/2-inch (13-mm) numbers. Provide 5/32-inch (4-mm) hole for fastener.
  - 1. Material: 0.032-inch- (0.8-mm-) thick brass.
  - 2. Valve-Tag Fasteners: Brass wire-link or S-hook.

## PART 3 - EXECUTION

### 3.1 APPLICATIONS, GENERAL

- A. Products specified are for applications referenced in other Division 22 Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

### 3.2 PIPING IDENTIFICATION

- A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
  - 1. Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): Pretensioned pipe markers. Use size to ensure a tight fit.
- B. Locate pipe markers and color bands where piping is exposed in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior nonconcealed locations as follows:
  - 1. Near each valve and control device.



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2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and nonaccessible enclosures.
4. Near major equipment items and other points of origination and termination.
5. Spaced at maximum intervals of 50 feet (15 m) along each run. Reduce intervals to 25 feet (7.6 m) in areas of congested piping and equipment.

### 3.3 VALVE-TAG INSTALLATION

- A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; plumbing fixture supply stops; shutoff valves; faucets; convenience and lawn-watering hose connections; and terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following:
  1. Valve-Tag Size and Shape:
    - a. Cold Water: 2 inches (50 mm), round.
  2. Valve-Tag Color:
    - a. Cold Water: Natural.
  3. Letter Color:
    - a. Cold Water: White.

END OF SECTION 22 05 53

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## SECTION 22 11 16 - DOMESTIC WATER PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes domestic water piping inside the building.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
  - 1. Division 22 Section 22 05 00, "Common Work Results for Plumbing".
  - 2. This section is part of each Division 22.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Provide components and installation capable of producing domestic water piping systems with a minimum pressure rating of 125 psig (860 kPa) unless otherwise indicated.

#### 1.4 UL GROUNDING AND BONDING

- A. Metal water piping shall be bonded to the grounding electrode in accordance with the requirements of the NEC (250.104-A-1). Groove lock fittings that are UL listed for grounding and bonding shall be permitted without either a jumper across each fitting or a ground loop to ground each section of pipe. Groove lock fittings that are not UL listed for grounding and bonding shall not be permitted. All domestic water piping of dissimilar materials shall be grounded independent of other materials; do not connect across the di-electric fittings.

#### 1.5 SUBMITTALS

- A. Product Data: For pipe, tube, fittings, and couplings.

#### 1.6 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 01 through 09," for potable domestic water piping and components.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

### 2.2 PIPING MATERIALS

- A. Refer to Part 3 "Pipe and Fitting Applications" Article for applications of pipe, tube, fitting, and joining materials.
- B. Transition Couplings for Aboveground Pressure Piping: Coupling or other manufactured fitting the same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

### 2.3 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade A or B, Schedule 40, galvanized. Include ends matching joining method.
  - 1. Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106, Schedule 40, galvanized, seamless steel pipe. Include ends matching joining method.
  - 2. Malleable-Iron Unions: ASME B16.39, Class 150, hexagonal-stock body, with ball-and-socket, metal-to-metal, bronze seating surface and female threaded ends.
  - 3. Gray-Iron, Threaded Fittings: ASME B16.4, Class 125, galvanized, standard pattern.

### 2.4 COPPER TUBE AND FITTINGS

- A. Hard Copper Tube: ASTM B 88, Type L (ASTM B 88M, Type B), water tube, drawn temper.
  - 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
  - 2. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

### 2.5 VALVES

- A. Refer to schedule on drawings for manufacturer and Model Numbers.

### PART 3 - EXECUTION

#### 3.1 EXCAVATION

- A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earthwork."

#### 3.2 PIPE AND FITTING APPLICATIONS

- A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below, unless otherwise indicated.
- B. Under-Building-Slab, Domestic Water Piping on House Side of Water Meter, NPS 4 (DN 100) and Smaller: Galvanized steel pipe and gray-iron galvanized threaded fittings.
- C. Aboveground Domestic Water Piping: Use the following piping materials for each size range:

1. NPS 1 (DN 25) and Smaller:

- a. Hard copper tube, Type L (Type B); copper pressure fittings; and soldered joints.

2. NPS 1-1/4 and NPS 1-1/2 (DN 32 and DN 40):

- a. Hard copper tube, Type L (Type B); copper pressure fittings; and soldered joints.

3. NPS 2 to NPS 4 (DN 50 to DN 100):

- a. Hard copper tube, Type L (Type B); copper pressure fittings; and soldered joints.

#### 3.3 VALVE APPLICATIONS

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Shutoff Duty: Use bronze ball or gate valves for piping NPS 2 (DN 50) and smaller. Use cast-iron butterfly or gate valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.

- B. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment. Use ball or gate valves for piping NPS 2 (DN 50) and smaller. Use butterfly or gate valves for piping NPS 2-1/2 (DN 65) and larger.

### 3.4 PIPING INSTALLATION

- A. Install cast-iron sleeve with water stop and mechanical sleeve seal at each service pipe penetration through foundation wall. Select number of interlocking rubber links required to make installation watertight. Sleeves and mechanical sleeve seals are specified in Section 22 05 00 "Common Work Results for Plumbing."
- B. Install wall penetration system at each service pipe penetration through foundation wall. Make installation watertight. Wall penetration systems are specified in Section 22 05 00 "Common Work Results for Plumbing."

### 3.5 JOINT CONSTRUCTION

- A. Basic piping joint construction requirements are specified in Division 22 05 00 Section "Common Work Results for Plumbing."
- B. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

### 3.6 HANGER AND SUPPORT INSTALLATION

- A. Pipe hanger and support devices are specified in Section 22 05 43 "Hangers, Supports, Anchors and Guides" Install the following:
  - 1. Vertical Piping: MSS Type 8 or Type 42, clamps.
  - 2. Individual, Straight, Horizontal Piping Runs: According to the following:
    - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
- B. Install supports according to Section 22 05 43 "Plumbing - Hangers and Supports."
- C. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
  - 1. NPS 3/4 (DN 20) and Smaller: 60 inches (1500 mm) with 3/8-inch (10-mm) rod.
  - 2. NPS 1 and NPS 1-1/4 (DN 25 and DN 32): 72 inches (1800 mm) with 3/8-inch (10-mm) rod.
  - 3. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 96 inches (2400 mm) with 3/8-inch (10-mm) rod.
  - 4. NPS 2-1/2 (DN 65): 108 inches (2700 mm) with 1/2-inch (13-mm) rod.
- D. Install supports for vertical copper tubing every 10 feet (3 m).

### 3.7 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.

- B. Install piping adjacent to equipment and machines to allow service and maintenance.

### 3.8 FIELD QUALITY CONTROL

- A. Inspect domestic water piping as follows:

1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
2. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
  - a. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
3. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

- B. Test domestic water piping as follows:

1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
4. Cap and subject piping to static water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

### 3.9 CLEANING

- A. Clean and disinfect potable and/or non-potable domestic water piping as follows:

1. Purge new piping and parts of existing domestic water piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction or, if methods are not prescribed, procedures described in either AWWA C651 or AWWA C652 or as described below:
  - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
  - b. Fill and isolate system according to either of the following:
    - (i) Fill system or part thereof with water/chlorine solution with at least 50 ppm (50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours.
    - (ii) Fill system or part thereof with water/chlorine solution with at least 200 ppm (200 mg/L) of chlorine. Isolate and allow to stand for three hours.
  - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
  - d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.
- B. Prepare and submit reports of purging and disinfecting activities.
- C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

END OF SECTION 22 11 16



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SECTION 22 13 16 - SANITARY, VENT AND STORM DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following for soil, waste, and vent piping inside the building:
  - 1. Pipe, tube, and fittings.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
  - 1. Division 22 Section 22 05 00 "Common Work Results for Plumbing".
  - 2. This section is a part of each Division 22.

1.3 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressure, unless otherwise indicated:
  - 1. Sanitary, Vent and Storm Drainage Piping: 10-foot head of water (30 kPa).

1.4 SUBMITTALS

- A. Product Data: For pipe, tube, fittings, and couplings.
- B. Field quality-control inspection and test reports.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 PIPING MATERIALS

- A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

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2.3 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 74, Service class. All class iron soil pipe and fittings shall be marked with the collective Trademark of the Cast Iron Soil Pipe Institute.
- B. Gaskets: ASTM C 564, rubber.

2.4 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.
- B. Shielded Couplings: ASTM C 1277 assembly of metal shield or housing, corrosion-resistant fasteners, and rubber sleeve with integral, center pipe stop.
  - 1. Standard, Shielded, Stainless-Steel Couplings: CISPI 310, with stainless-steel corrugated shield; stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve.
    - a. Manufacturers:
      - (i) ANACO.
      - (ii) Clamp-All Corp.
      - (iii) Tyler Pipe; Soil Pipe Div.
  - 2. Heavy-Duty, Shielded, Stainless-Steel Couplings: With stainless-steel shield, stainless-steel bands and tightening devices, and ASTM C 564, rubber sleeve.
    - a. Manufacturers:
      - (i) ANACO.
      - (ii) Clamp-All Corp.
      - (iii) Tyler Pipe; Soil Pipe Div.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

- A. Aboveground, sanitary and vent NPS 2 (DN 50) and larger shall be the following:
  - 1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
  - 2. Hubless cast-iron soil pipe and fittings heavy-duty shielded, stainless-steel couplings; and hubless-coupling joints.
- B. Underground, sanitary, vent and storm drainage piping NPS 2 (DN 50) and larger shall be the following:

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1. Service class, cast-iron soil piping; gaskets; and gasketed joints.

### 3.2 PIPING INSTALLATION

- A. Sanitary sewer piping outside the building is specified in Division 02 Section "Sanitary Sewerage."
- B. Basic piping installation requirements are specified in Division 22 Section "Common Work Results for Plumbing."
- C. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers.
- D. Install cleanout fitting with closure plug inside the building in sanitary force-main piping.
- E. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
- F. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.
- G. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.
- H. Install sanitary, vent and storm drainage piping at the following minimum slopes, unless otherwise indicated:
  1. Building Sanitary: 2 percent downward in direction of flow for piping NPS 2 (DN 50) and smaller; 1 percent downward in direction of flow for piping NPS 3 (DN 80) and larger.
  2. Horizontal Sanitary Piping: 1 percent downward in direction of flow.
  3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
- I. Sleeves are not required for cast-iron soil piping passing through concrete slabs-on-grade if slab is without membrane waterproofing.
- J. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

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- K. Vent piping shall be run in a system of branches and stacks continuously upward to a point of minimum 24" (1800 mm) above the roof.

### 3.3 JOINT CONSTRUCTION

- A. Basic piping joint construction requirements are specified in Section 22 05 00 "Common Work Results for Plumbing."
- B. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
- C. Join hubless cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-coupling joints.

### 3.4 HANGER AND SUPPORT INSTALLATION

- A. Pipe hangers and supports are specified in Section 22 05 43 "Hangers, Supports, Anchors and Guides." Install the following:
  - 1. Vertical Piping: MSS Type 8 or Type 42, clamps.
  - 2. Install individual, straight, horizontal piping runs according to the following:
    - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
- B. Install supports according to Section 22 05 43 "Hangers, Supports, Anchors and Guides."
- C. Support vertical piping and tubing at base.
- D. Rod diameter may be reduced 1 size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.
- E. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:
  - 1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 60 inches (1500 mm) with 3/8-inch (10-mm) rod.
  - 2. NPS 3 (DN 80): 60 inches (1500 mm) with 1/2-inch (13-mm) rod.
  - 3. NPS 4 and NPS 5 (DN 100 and DN 125): 60 inches (1500 mm) with 5/8-inch (16-mm) rod.
- F. Install supports for vertical cast-iron soil piping every 15 feet (4.5 m).

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**3.5 CONNECTIONS**

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect drainage and vent piping to the following:
  - 1. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.

**3.6 FIELD QUALITY CONTROL**

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
  - 1. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary, storm drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
  - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
  - 2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
  - 3. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg (250 Pa). Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
  - 4. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
  - 5. Prepare reports for tests and required corrective action.

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3.7 CLEANING

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.

END OF SECTION 22 13 16

SECTION 23 05 00 - COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 DESIGN CRITERIA

A. Outdoor Design Conditions

1. Winter: (- 13°F)

B. Indoor Design Conditions

1. Winter

a. Occupied Spaces:

(i) Temperature: 68°F + 2°F (occupied)

(ii) Relative Humidity:- no humidification is included in the project.

b. Unconditioned Spaces (mechanical rooms)

(i) Temperature: 64°F + 2°F (winter), 100°F + 2°F (summer)

C. Acoustical Criteria:

1. Noise levels due to equipment and ductwork shall be designed to achieve the requirements of section 24-227 of the New York City Noise Code:

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this and the other sections of Division 23.

B. Section 23 05 48 – "Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design)".

C. Section 23 05 50 - "Basic Mechanical Materials and Methods".

D. This section is a part of each Division 23 Section.

1.3 REFERENCE STANDARDS: The reference standards listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

A. American National Standard Institute (ANSI):

B. American Movement and Control Association International, Inc. (AMCA):

C. American Society of Mechanical Engineers (ASME):

- D. American Society for Testing and Materials (ASTM):
- E. National Fire Protection Association (NFPA):
- F. Associated Air Balance Council (AABC).
- G. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).
- H. American Welding Society (AWS)
- I. National Environmental Balancing Bureau (NEBB).
- J. National Electrical Code (NEC)
- K. Occupational Safety and Health Administration (OSHA).
- L. Underwriters Laboratories (UL).

#### 1.4 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract.
- B. Prior to purchasing any equipment or materials, a list of their manufacturers shall be submitted for review.
- C. Prior to assembling or installing the work, the following shall be submitted for review:
  - 1. Scale drawings indicating insert and sleeve locations.
  - 2. Scale drawings showing all piping and duct runs with sizes, elevations and appropriate indication of coordination with other trades. This submission to us shall consist of an electronic submittal and 2 paper prints.
  - 3. Catalog information, factory assembly drawings and field installation drawings as required for a complete explanation and description of all items of equipment.
  - 4. Coordination drawings for access panel and door locations.
  - 5. Shop drawings detailing fabrication and installation for supports for mechanical materials and equipment.
  - 6. Mechanical Contractor shall submit complete AC unit sheet metal and piping shop drawings to the AC unit manufacturer prior to submission to the Engineer. The AC unit manufacturer shall approve the air performance and acoustical performance of the AC units in the location and with the ductwork and piping configuration and construction as indicated on the shop drawing. AC unit manufacturer shall indicate approval directly on the shop drawing.
  - 7. Welder Certificates signed by Contractor certifying that welders comply with requirements specified under "Quality Assurance" in Section 25 05 50.



D. Documents will not be accepted for review unless:

1. They include complete information pertaining to appurtenances and accessories.
2. They are submitted as a package where they pertain to related items.
3. They are properly marked with service or function, project name, where they consist of catalog sheets displaying other items which are not applicable.
4. They indicate the project name and address along with the Contractor's name, address and phone number.
5. They are properly marked with external connection identification as related to the project where they consist of standard factory assembly or field installation drawings.

E. Shop Drawing Review

1. The purpose of the review of shop drawings is to maintain integrity of the design. Unless the contractor clearly points out changes, substitutions, deletions or any other differences between the submission and the Contract Documents in writing on the Contractor's letterhead, review by the Engineer or Architect does not constitute acceptance. It is not to be assumed that the engineer has read the text nor reviewed the technical data of a manufactured item and its components including where the Vendor has pointed out differences between his product and the specified model.
2. It is the responsibility of the contractor to confirm all dimensions, quantities, and the coordination of materials and products supplied by him with other trades. Review of shop drawings containing errors does not relieve the contractor from making corrections at his expense.
3. Substitutions of equipment, systems, materials, temperature controls must be coordinated by the Contractor with his own or other trades which may be involved with the item, such as, but not limited to, equipment substitutions which change electrical requirements, or hanging or support weights or dimensions.
4. Any extra changes or credits which may be generated by other trades due to substitutions will not be accepted unless the Contractor has an agreement in writing with the Commissioner.
5. Proposed substitutions shall be in accordance with the requirements of the section governing substitutions. Substitutions of equipment, systems, etc. requiring approval of local authorities must comply with such regulations and be filed at the expense of the Contractor (should filing be necessary). Substitutions are subject to approval or disapproval by the Engineer. The contractor in offering substitutions shall hold the City of New York and Engineer harmless if the substituted item is an infringement of patent held by the specified item.

F. Explanation of Shop Drawing Stamp

1. Reviewed - No Exception Taken: indicates that we have not found any reason why this item should not be acceptable within the intent of the contract documents.
2. Exception Taken As Noted: indicates that we have found questionable components which if corrected or otherwise explained make the product acceptable.
3. Revised and Resubmit: indicates that this item should be resubmitted for review before further processing.
4. Resubmit Specified Item: indicates that the item will not meet the intent of the Contract.
5. Incomplete - Resubmit: Indicates that the submission is not complete and ready for review by the Architect or Engineer.
6. No shop drawing stamp or note shall constitute an order to fabricate or ship. Such notification can only be performed by the Project Manager for Construction, the Contractor scheduling his own work, or the Commissioner.
7. The Contractor is responsible for having "Reviewed" copies of shop drawings bearing the Reviewed - No Exception Taken stamp of the Architect/Engineer or Commissioner kept on the job site and work is implemented in the field in accordance with these documents.
8. Where information from one Contractor is required by another contractor, it is the responsibility of the contractors to exchange information and coordinate their work.

#### 1.5 COORDINATION DRAWINGS

- A. Prepare coordination drawings to a scale of 3/8"=1'-0" or larger; detailing major elements, equipment components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the Work, including (but not necessarily limited to) the following:
  1. The coordination drawings shall be produced using AutoCad 2000 or later software. The design drawings will be made available on disks in AutoCad format for use as a basis for the "Coordination" drawings.
  2. Indicate the proposed locations of piping, ductwork, equipment, and materials. Include the following:
    - a. Planned piping layout, including valve and specialty locations and valve stem movement.
    - b. Planned duct system layout, including elbow radii and duct accessories.
    - c. Clearances for seismic supports and restraints.
    - d. Clearances for installing and maintaining insulation.

- e. Clearances for servicing and maintaining equipment, including tube removal, filter removal, and space for equipment disassembly required for periodic maintenance.
  - f. Equipment connections and support details.
  - g. Exterior wall and foundation penetrations.
  - h. Fire-rated wall and floor penetrations.
  - i. Sizes and location of required concrete pads and bases.
  - j. Clearances as required by Electric Code.
3. Indicate piping loads and support points for all piping 3" and larger, racked piping, and submit to the Structural Engineer for review and approval. Indicate the elevation, location, support points, and loads imposed on the structure at support, anchor points, and size of all lines. Indicate all beam penetrations and slab penetrations sized and coordinated. Indicate all work routed underground or embedded in concrete by dimension to column and building lines.
  4. Indicate seismic support and restraint for all piping, ductwork and equipment, as specified under another section of this work.
  5. Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.
  6. Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.
  7. Prepare reflected ceiling plans to coordinate and integrate installations, air outlets and inlets, light fixtures, communication systems components, sprinklers, and other ceiling-mounted items.

**B. HVAC Coordination Drawings**

1. This Contractor shall prepare a complete set of construction Coordination Drawings showing all of the HVAC work (equipment, piping,, ductwork, conduit, etc.) to be installed as part of the work of this section of the specifications.
2. All seismic supports and restraints as part of the seismic design (as outlined under another section of this work) shall be shown on the coordination drawings.
3. The Coordination Drawings shall be prepared on electronic media (CADD) at not less than 3/8": 1'-0" scale.
4. Requirements for vibration isolation shall be shown on the coordination drawings by each trade.
5. The HVAC coordination drawings, shall serve as the base drawing to which all other contractors will overlay and add their work.
6. This Trade after showing all of the HVAC work shall forward the reproducible Coordination Drawings to the Plumbing Contractor.
7. The sequence of coordination drawings shall be HVAC-PLBG-FP-ELEC-GC.

8. The HVAC Contractor shall be designated as the lead contractor in the development of the composite layering process and shall be responsible for electronically restacking the various trade layers into the final composite (CADD) Drawings. Each trade shall draw their Work on separate layers represented by individual colors.
9. The HVAC Contractor shall attend a series of meetings arranged by the General Contractor to resolve any real or apparent interferences or conflicts with the work of the other Contractors or with ceiling heights shown on the architectural drawings.
10. The HVAC Contractor shall then make adjustments to his work on the Coordination Drawings to resolve any real or apparent interferences or conflicts.
11. After any real or apparent interferences and conflicts have been incorporated into the Coordination Drawings, the HVAC Contractor shall "sign-off" the final Coordination Drawings.
12. The HVAC Subcontractor shall not install any of his work prior to "sign-off" of final Coordination Drawings. If HVAC work proceeds prior to sign-off of Coordination Drawings, any change to the HVAC work to correct the interferences and conflicts which result will be made by the HVAC Contractor at no additional cost to the project.
13. Coordination Drawings are for the HVAC Contractor's and City of New York's use during construction and shall not be construed as replacing any shop, "as-built", or Record Drawings required elsewhere in these Contract Documents.
14. Review of Coordination Drawings shall not relieve the HVAC Contractor from his overall responsibility for coordination of all work performed pursuant to the Contract or from any other requirements of the Contract.

#### 1.6 RECORD DOCUMENTS

- A. Prepare record documents in accordance with the requirements in Division 01. In addition to the requirements specified in Division 01, comply with the following.
  1. A complete set of "as-built" or record drawings shall be made up and delivered to the Commissioner.
  2. The drawings shall show
    - a. Ductwork mains and branches, size and location, for both exterior and interior; locations of all dampers and other control devices; filters, boxes, and terminal units requiring periodic maintenance or repair.
    - b. Mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (i.e., traps, strainers, expansion compensators, tanks, etc.). Valve location diagrams, complete with valve tag chart. Refer to Division 23 Section "Mechanical Identification." Indicate horizontal locations of underground piping.
    - c. Equipment locations (exposed and concealed), dimensioned from prominent building lines.

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- d. Seismic restraints and supports.
  - e. Approved substitutions, Contract Modifications, and actual equipment and materials installed.
  - f. All "main air" pneumatic control piping routing locations must be shown.
  - g. Updating of all equipment schedule sheets.
- B. This trade shall submit the "as-built" set for approval by the building department in a form acceptable to the department, when required by the jurisdiction.
- C. The drawings shall be produced using AutoCad 2000 or later software. The design drawings will be made available on disks in AutoCad format for use as a basis for the "as-built" drawings. Prior to developing any "as-built" drawings, the contractor shall coordinate with the City of New York, Commissioner and the Architect and Engineer the drawing layers, colors, etc., of the CAD drawings. "As-built" information shall be submitted as follows:
1. CAD drawing files on disks in AutoCad 2000 format.
  2. Two (2) sets of drawings.
- D. The quantity of design drawings which are made available shall in no way be interpreted as setting a limit to the number of drawings necessary to show the required "as-built" information.
- E. Progress prints of record drawings shall be submitted monthly during the construction period for Architect's review.

#### 1.7 MAINTENANCE MANUALS

- A. Prepare maintenance manuals in accordance with Division 01. In addition to the requirements specified in Division 01, include the following information for equipment items:
1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
  2. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.
  3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
  4. Servicing instructions and lubrication charts and schedules.
  5. List of spares: recommended for normal service requirements.
  6. Parts list: identifying the various parts of the equipment for repair and replacement purposes.
  7. Instruction books may be standard booklets but shall be clearly marked to indicate applicable equipment.

8. Wiring diagrams: generalized diagrams are not acceptable, submittal shall be specifically prepared for this project.
9. Automatic controls: diagrams and functional descriptions. (See control specification for additional requirements).

#### 1.8 CODES, PERMITS AND INSPECTIONS

- A. All work shall meet or exceed the latest requirements of all national, state, county, municipal and other authorities exercising jurisdiction over construction work at the project. These include, but are not limited to the following:
  1. NFPA National Fire Codes
  2. New York City Construction Code
  3. All work shall meet or exceed NYSERDA, USGBC LEED™, and GBTC Green Building requirements when applicable.
- B. All required permits and inspection certificates shall be obtained, paid for, and made available at the completion of the work.
- C. Any portion of the work which is not subject to the approval of an authority having jurisdiction, shall be governed by the applicable sections of the overall National Fire Code, as published by the National Fire Protection Association.
- D. Installation procedures, methods, and conditions shall comply with the latest requirements of The Federal Occupational Safety and Health Act (OSHA).
- E. Prepare and submit to the building department a set of "as-built" record drawings for approval, in a form acceptable to the building department.
- F. This Contractor shall prepare all plans, amendments and pay all filing fees that will be required for the fuel burning installation, including boiler plant, gas/oil fired chillers, chimney, oil piping, fuel oil tanks, gas piping, breeching, and any or all parts of the system under the jurisdiction of the controlling agencies.
- G. This Contractor shall prepare all plans, amendments and pay all filing fees that will be required for the emergency generator installation, including oil piping, engine exhaust, fuel oil tanks, and any or all parts of the system under the jurisdiction of the controlling agencies.
- H. This Contractor shall prepare all plans, amendments, and pay all filing fees that will be required for the electric generator and electric generator fuel oil tank installation.
- I. This Contractor shall be responsible for the installation and filing until the installation has been approved by the authorities having such jurisdiction.

## 1.9 DEFINITIONS AND INTERPRETATIONS

- A. Specific items of terminology, as used herein or on drawings, shall have the following meanings.
1. "Piping"--Pipe, fittings, flanges, valves, controls, hangers, traps, drains, insulation, vents, and items customarily required in connection with the transfer of fluids.
  2. "Concealed"--Embedded in masonry or other construction, installed behind wall furring, within double partitions or hung ceilings, in crawl spaces, in shafts.
  3. "Exposed"--Not concealed.
  4. "By Other Trades" or "Others" or "Oth"--By persons or parties responsible for work at the project other than the party or parties who have been duly awarded the contract for the work of this Trade. In the event that this document is used to acquire work as part of a general construction contract the words "by other trades" shall mean by persons or parties who are not anticipated to be the sub-contractor for this trade working together with the general contractor. In this context the words "by other trades" shall not be interpreted to mean not included in the overall contract.
  5. Where reference is made to N.E.M.A. Standards, it shall be understood that this reference is to the "Approved Standards", published by the National Electrical Manufacturers Association, Main Office - 1300 North 17<sup>th</sup> Street, Suite 1752, Rosslyn, Virginia 22209.
  6. Where reference is made to "A.N.S.I. Standards", it shall be understood that this reference is to the standards published by the American National Standards Institute Incorporated.

## 1.10 INTERPRETATION OF THE DRAWINGS AND SPECIFICATIONS:

- A. As used in the drawings and specifications, certain non technical words shall be understood to have specific meanings as follows:
1. "Furnish"--Purchase and deliver to the project site complete with every necessary appurtenance and support.
  2. "Install"--Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project.
  3. "Provide"--"Furnish" and "Install".
- B. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any item, in the drawings or specifications or both, carries with it the instruction to furnish and install the item, regardless of whether or not this instruction is explicitly stated as part of the indication or description.

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- C. It shall be understood that the specifications and drawings are complementary and are to be taken together for a complete interpretation of the work. Where there are conflicts between the drawings and specifications or within the specifications or drawings themselves, the items of higher standard shall govern.
- D. No exclusions from, or limitations, in the language used in the drawings or specifications shall be interpreted as meaning that the appurtenances or accessories necessary to complete any required system or item of equipment are to be omitted.
- E. The drawings of necessity utilize symbols and schematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installations. The work shall be installed, in accordance with the diagrammatic intent expressed on the electrical and mechanical drawings, and in conformity with the dimensions indicated on final architectural and structural working drawings and on equipment shop drawings and in accordance with the contractor's coordination drawings.
- F. No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete work are excluded.
- G. Certain details appear on the drawings which are specific with regard to the dimensioning and positioning of the work. These details are intended only for the purpose of establishing general feasibility. They do not obviate field coordination for the indicated work.
- H. Information as to the general construction shall be derived from structural and architectural drawings and specifications only.
- I. The use of words in the singular shall not be considered as limiting where other indications denote that more than one item is referred to.
- J. In the event that extra work is authorized, and performed by this trade, work shown on drawings depicting such work, and/or described by Bulletin is subject to the base building specifications in all respects.

**1.11 SEISMIC DESIGN**

- A. This project requires and must comply with seismic provisions for the support and restraint of equipment, components and piping. See Section 23 05 48 - "Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design)." for additional requirements.

**PART 2 - PRODUCTS**

(Not Applicable)



### PART 3 - EXECUTION

#### 3.1 OPERATING INSTRUCTIONS

- A. After all final tests and adjustments have been completed, fully instruct the proper Commissioner's Representative in all details of operation for equipment installed. Supply qualified personnel to operate equipment for sufficient length of time to assure that Commissioner's Representative is properly qualified to take over operation and maintenance procedures. Supply qualified personnel to operate equipment for sufficient length of time as required to meet all governing authorities in operation and performance tests.

#### 3.2 GUARANTEES AND CERTIFICATIONS

- A. All work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from same shall be replaced or repaired as directed for the duration of stipulated guaranteed periods.
- B. The duration of guarantee periods following the date of beneficial use of the system shall be one year. Beneficial use is defined as operation of the system to obtain its intended use. For example, in the case of refrigeration systems, it means that the plant has a cooling load. Similarly, for all other systems.
- C. The date of acceptance shall be the date of the final payment for the work or the date of a formal notice of acceptance, whichever is earlier.
- D. Non-durable replaceable items such as air filter media do not require replacement after the date of acceptance. If received in writing, requests to have earlier acceptance dates established for these items will be honored.
- E. Certification shall be submitted attesting to the fact that specified performance criteria are met by all items of heating and air conditioning equipment.

#### 3.3 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment specifications in Divisions 02 through 26 for rough-in requirements.

#### 3.4 MECHANICAL INSTALLATIONS

- A. General: Sequence, coordinate, and integrate the various elements of mechanical systems, materials, and equipment. Comply with the following requirements:
- B. Coordinate mechanical systems, equipment, and materials installation with other building components.
- C. Verify all dimensions by field measurements.
- D. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for mechanical installations.

- E. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
- F. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
  - 1. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
  - 2. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
  - 3. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.
  - 4. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
  - 5. Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.
  - 6. Install access panel or doors for maintenance or inspection where units are concealed behind finished surfaces. Access panels and doors are specified in and Division 23 Section 23 05 50 - Basic Mechanical Materials and Methods.
  - 7. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

### 3.5 CUTTING AND PATCHING

- A. General: Perform cutting and patching in accordance with Division 01 Section "CUTTING AND PATCHING." In addition to the requirements specified in Division 01, the following requirements apply:
  - 1. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.
- B. Perform cutting, fitting, and patching of mechanical equipment and materials required to:
  - 1. Uncover Work to provide for installation of ill-timed Work.
  - 2. Remove and replace defective Work.

3. Remove and replace Work not conforming to requirements of the Contract Documents.
  4. Remove samples of installed Work as specified for testing.
  5. Install equipment and materials in existing structures.
  6. Upon written instructions from the Architect, uncover and restore Work to provide for Architect/Engineer observation of concealed Work.
- C. Cut, remove and legally dispose of selected mechanical equipment, components, and materials as indicated, including but not limited to removal of mechanical piping, heating units, plumbing fixtures and trim, and other mechanical items made obsolete by the new Work.
- D. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
- E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
1. Patch existing finished surfaces and building components using new materials matching existing materials and experienced Installers. Installers' qualifications refer to the materials and methods required for the surface and building components being patched.
  2. Patch finished surfaces and building components using new materials specified for the original installation and experienced Installers. Installers' qualifications refer to the materials and methods required for the surface and building components being patched.

### 3.6 SITE VISITATION SURVEYS AND MEASUREMENTS

- A. All existing conditions cannot be completely detailed on the drawings. These include, but are not limited to piping fixtures, equipment, etc. This contractor shall survey the site and include all required costs in making up their bid proposal.
- B. The contractor shall visit the premises to determine existing conditions and compare same with drawings and specifications and satisfy himself of all conditions prior to the submission of a bid proposal. No allowance will be made for failure to comply with these requirements and a bid proposal shall be construed as evidence he has done so.
- C. Before submitting bid, visit the project site to satisfy yourself that all equipment shown or specified in the project contract documents can be installed generally as shown. Advise Commissioner prior to bid date, of any space or other installation problems.
- D. Before submitting bid, become thoroughly familiar with all conditions under which work will be installed, as you will be held responsible for any assumptions, any omissions or errors made as a result of failure to become familiar with the site and Contract Documents.

- E. Investigate each space through which equipment must be moved. Where necessary, equipment shall be shipped from manufacturer in sections of size suitable for moving through restrictive spaces available. Ascertain from Commissioner at what time of day equipment may be moved through certain restrictive areas.
- F. Install work so as to be readily accessible for operation, maintenance and repair. Minor deviations from drawings may be made to accomplish this, but changes which involve extra cost shall not be made without approval.
- G. Removal and relocation of certain existing work will be necessary for the performance of the general work. All existing conditions cannot be completely detailed on the drawings. The Contractor shall survey the site and include all required changes in making up their bid proposal.
- H. Submission of a bid shall be construed as evidence, that a careful examination of the portions of the existing building, equipment, etc., which affect this work and the access to such spaces has been made and that the Contractor is familiar with existing conditions and difficulties that will affect the execution of the work. Claims will not be allowed for labor, equipment or materials required because of difficulties encountered, which could have been foreseen during such an examination.

### 3.7 REMOVALS AND ALTERATIONS

- A. This contractor shall provide all required labor, materials, equipment and perform all operations for complete demolition, removal and relocation of the existing work as indicated on the drawings and/or as specified or described and/or as required for the performance of the general work under this contract.
- B. All removed equipment and material shall be removed from the project site.
- C. Unless otherwise specifically specified, include all cutting and patching of existing floors, walls, partitions and other materials in the existing building. The Contractor shall restore these areas to original conditions.
- D. Provide alteration work as shown on drawings or described herein. If asbestos is present or suspected to be present inform the Commissioner in writing so that such removal can be carried out by qualified personnel hired by the Commissioner. Do not commence demolition until such work has been completed.

### 3.8 CONNECTIONS TO EXISTING WORK

- A. Plan installation of new work and connections to existing work to insure minimum interference with regular operation of existing facilities. Submit to the Commissioner for approval, date schedule of necessary temporary shut-downs of existing services. All shutdowns shall be made at such times as will not interfere with regular operation of existing facilities and only after written approval of Commissioner. To insure continuous operation, make necessary temporary connections between new and existing work. All costs resulting from temporary shut-downs shall be borne by this Contractor.

### 3.9 PRECONSTRUCTION TESTING - EXISTING AIR SYSTEMS

- A. Prior to the removal of any existing ductwork and/or the installation of any new ductwork on the contract floor, this contractor shall test the individual floor supply and return total airflows. These tests shall be made at the main ducts located on the floor either at the shafts or at the floor mounted AC units.
- B. This contractor shall submit the test results to the architect and engineer for review.

### 3.10 EXISTING SYSTEMS CLEANING

- A. All existing fan coil units that are to remain on the project floors shall be fully cleaned with microbial solution including coils, plenum, etc. All coils are to be combed. Filters are to be replaced with new.
- B. All existing reheat coils that are to remain on the project floors shall be fully cleaned with microbial solution and combed.
- C. All existing induction units that are to remain on the project floors shall be fully cleaned with microbial solution including coils, plenum, etc. All coils are to be combed. Filters are to be replaced with new.

### 3.11 PRE-OCCUPANCY SPACE FLUSH OUT

- A. At completion of construction, prior to turn over of the building, the contractor shall conduct a pre-occupancy flush out of the system as follows:
  - 1. All supply air systems shall be run at 100% fan capacity for a period of two weeks.
  - 2. During the flush out, all outside air dampers shall be locked into the 100% outside air position. Return air dampers shall be fully closed and all spill air dampers shall be 100% open. Exhaust fans shall be operated at 100% exhaust.
  - 3. Cooling and/or heating coil valves shall be controlled by the building management system to provide properly tempered and dehumidified air.
    - a. Supply air temperature shall be set to provide a maximum space temperature of 78°F, minimum space temperature of 66°F and a maximum space humidity of 60% RH.
  - 4. All exhaust fans that are required to run to maintain proper building pressurization shall be operated at 100% fan capacity for the flush out period.

END OF SECTION 23 05 00

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## SECTION 23 05 13 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes basic requirements for factory-installed and field-installed motors.
- B. Related Sections include the following:
  - 1. Division 23 Section 23 05 48 – “23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design)”.
  - 2. Division 23 Sections for application of motors and reference to specific motor requirements for motor-driven equipment.

#### 1.3 DEFINITIONS

- A. **Factory-Installed Motor:** A motor installed by motorized-equipment manufacturer as a component of equipment.
- B. **Field-Installed Motor:** A motor installed at Project site and not factory installed as an integral component of motorized equipment.

#### 1.4 SUBMITTALS

- A. **Product Data for Field-Installed Motors:** For each type and size of motor, provide nameplate data and ratings; shipping, installed, and operating weights; mounting arrangements; size, type, and location of winding terminations; conduit entry and ground lug locations; and information on coatings or finishes.
- B. **Shop Drawings for Field-Installed Motors:** Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Include the following:
  - 1. Each installed unit's type and details.
  - 2. Nameplate legends.
- C. **Manufacturer Seismic Qualification Certification:** Submit certification that motors, accessories, and components will withstand seismic forces defined in Division 23 Section "Mechanical Vibration and Seismic Controls." Include the following:
  - 1. **Test Reports:** Written reports specified in Parts 2 and 3.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain field-installed motors of a single type through one source from a single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70, as amended by state and local codes.

1.6 SEISMIC DESIGN

- A. This project is located within a seismic zone requiring special provisions for the support and restraint of equipment, components and piping. See Section 23 00 01 - Seismic, Wind and Flood Load Design for additional requirements.

1.7 COORDINATION

- A. Coordinate features of motors, installed units, and accessory devices. Provide motors that are:
  - 1. Compatible with the following:
    - a. Magnetic controllers.
  - 2. Designed and labeled for use with variable frequency controllers, and suitable for use throughout speed range without overheating.
  - 3. Matched to torque and horsepower requirements of the load.
  - 4. Matched to ratings and characteristics of supply circuit and required control sequence.
- B. Coordinate motor support with requirements for driven load; access for maintenance and motor replacement; installation of accessories, belts, belt guards; and adjustment of sliding rails for belt tensioning.
- C. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section.

PART 2 - PRODUCTS

2.1 MOTOR REQUIREMENTS

- A. Motor requirements apply to factory-installed and field-installed motors except as follows:
  - 1. Different ratings, performance, or characteristics for a motor are specified in another Section.



2. Manufacturer for a factory-installed motor requires ratings, performance, or characteristics, other than those specified in this Section, to meet performance specified.

## 2.2 MOTOR CHARACTERISTICS

- A. Motors  $\frac{1}{2}$  HP and Larger: Three phase.
- B. Motors Smaller Than  $\frac{1}{2}$  HP: Single phase.
- C. Frequency Rating: 60 Hz.
- D. Voltage Rating: NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected.
- E. Service Factor: 1.15 for open dripproof motors; 1.0 for totally enclosed motors.
- F. Duty: Continuous duty at ambient temperature of 105 deg F (40 deg C) and at altitude of 3300 feet (1005 m) above sea level.
- G. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.
- H. Enclosure: Open dripproof.

## 2.3 POLYPHASE MOTORS

- A. Description: NEMA MG 1, Design E, medium induction motor. Efficiency in accordance with NEMA standards for Premium Efficient motors and with applicable EPACT Efficiency Standards.
- B. Stator: Copper windings, unless otherwise indicated.
  1. Multispeed motors shall have separate winding for each speed.
- C. Rotor: Squirrel cage, unless otherwise indicated.
- D. Bearings: Double-shielded, prelubricated ball bearings suitable for radial and thrust loading.
- E. Temperature Rise: Match insulation rating, unless otherwise indicated.
- F. Insulation: Class F, unless otherwise indicated.
- G. Code Letter Designation:
  1. Motors 15 HP and Larger: NEMA starting Code F or G.
  2. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.

H. Enclosure: Cast iron for motors 7.5 hp and larger; rolled steel for motors smaller than 7.5 hp.

1. Finish: Gray enamel.

#### 2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Reduced-Inrush Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

1. Designed with critical vibration frequencies outside operating range of controller output.
2. Temperature Rise: Matched to rating for Class B insulation.
3. Insulation: Class H.
4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.
5. Inverter rated: Comply with NEMA MG-1 Part 31.4.4.2 requirements for inverter rated motors.

C. Rugged-Duty Motors: Totally enclosed, with 1.25 minimum service factor, greased bearings, integral condensate drains, and capped relief vents. Windings insulated with nonhygroscopic material.

1. Finish: Chemical-resistant paint over corrosion-resistant primer.

#### 2.5 SINGLE-PHASE MOTORS

A. Type: One of the following, to suit starting torque and requirements of specific motor application:

1. Permanent-split capacitor.
2. Split-phase start, capacitor run.
3. Capacitor start, capacitor run.

B. Shaded-Pole Motors: For motors 1/20 hp and smaller only.

C. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

- D. Bearings: Ball type for belt-connected motors and other motors with high radial forces on motor shaft; sealed, prelubricated-sleeve type for other single-phase motors.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas to receive field-installed motors for compliance with requirements, installation tolerances, and other conditions affecting performance.
- B. Examine roughing-in of conduit systems to verify actual locations of conduit connections before motor installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 MOTOR INSTALLATION

- A. Anchor each motor assembly to base, adjustable rails, or other support, arranged and sized according to manufacturer's written instructions. Attach by bolting. Level and align with load transfer link.
- B. Install motors on concrete bases complying with Division 03.
- C. Comply with mounting and anchoring requirements specified in Division 23 Section - Mechanical Vibration and Seismic Controls.

#### 3.3 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
  - 1. Run each motor with its controller. Demonstrate correct rotation, alignment, and speed at motor design load.
  - 2. Test interlocks and control features for proper operation.
  - 3. Verify that current in each phase is within nameplate rating.
- B. Testing: Perform the following field quality-control testing:
  - 1. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.15.1. Certify compliance with test parameters.
  - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

#### 3.4 ADJUSTING

- A. Align motors, bases, shafts, pulleys and belts. Tension belts according to manufacturer's written instructions.

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3.5 CLEANING

- A. After completing equipment installation, inspect unit components. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.
- B. Clean motors, on completion of installation, according to manufacturer's written instructions.

END OF SECTION 23 05 13

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**SECTION 23 05 48 - FOUNDATIONS, VIBRATION ISOLATION, & SUPPORTS FOR RIGIDLY SUPPORTED EQUIPMENT (SEISMIC DESIGN)**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. This section includes the following basic mechanical materials and methods to complement other Division 23 Sections.
- B. Vibration control (seismic), restraints for rigidly supported equipment (seismic design).
- C. Description of Work:
  - 1. Provide a complete system of vibration isolation and seismic restraints for each items of HVAC piping, ductwork, and equipment as specified herein and as needed for a complete and proper installation.
  - 2. Provide vibration isolation systems, complete as shown and specified per Contract Documents. Provide seismic restraints for every mechanical system including piping and ductwork within and on the roof of the building, complete as shown and specified per Contract Documents.
  - 3. The work of this section includes, but is not limited to, the following:
    - a. Vibration isolation elements for piping and equipment;
    - b. Equipment isolation bases;
    - c. Piping flexible connections;
    - d. Seismic restraints for isolated and non-isolated piping, tanks, stacks, ductwork, and equipment.
  - 4. It shall be understood that this section is complementary to requirements delineated elsewhere regarding seismic design and the support and fastening of equipment, piping and ductwork.

**1.2 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 23 05 00 - Common Work Results for HVAC.
  - 2. Section 23 05 50 - Basic Mechanical Materials and Methods.

C. Work specified elsewhere:

1. All floor and ceiling mounted equipment
2. Air distribution
3. Ductwork
4. Duct and Plenum Lining
5. Concrete Foundations Pads and Supports, Cast-in-Place Concrete
6. Pipe hangers

1.3 CODE AND STANDARD REQUIREMENTS

- A. SMACNA "Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems" (Latest Standard)
- B. ASHRAE GUIDE, Practical guide to Seismic Restraint, 1999.
- C. Uniform Building Code, Section 2312-1990 earthquake regulations with accumulative supplement.
- D. ANSI/SMACNA Seismic Restraint Manual 001-2000 Guidelines for mechanical systems, 2<sup>nd</sup> edition, Feb. 1998.
- E. New York City Seismic Code.

1.4 QUALITY ASSURANCE

- A. Applicator: Products provided by company specializing in vibration isolation with three years minimum experience.
- B. All vibration isolation and seismic restraint devices shall be the product of a single manufacturer. Products of other manufacturers are acceptable, provided that their systems comply with the design intent for system performance, static deflection and structural design of the base manufacturer.
- C. The following manufacturers will be reviewed for approval, provided their systems strictly comply with the design intent for performance, deflection and structural capacity of this specification.

- |    |  |                 |
|----|--|-----------------|
| 1. | Mason Industries, Inc.                 | Hauppauge, NY   |
| 2. | Vibration Mountings & Controls/Korfund | Bloomington, NJ |
| 3. | Kinetics Company                       | Dunlin, OH      |
| 4. | Korfund Dynamics Corp.                 | Bloomington, NJ |

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5. Vibration Eliminator Co., Inc. Long Island City, NY
6. Amber Booth Houston, TX
7. Or Approved Equal

D. Vibration isolation firms having a minimum of three (3) years experience in designing and installing vibration isolation and seismic restraint systems shall be qualified to provide the materials and installation required by this section. Project listings shall be provided including geographical location and a reference contact.

E. The installation of all vibration isolation units and associated seismic restraints hangers and bases, shall be under the direct supervision of the vibration isolation manufacturers' representative.

#### 1.5 SEISMIC DESIGN

A. This project is located within a seismic zone requiring special provisions for support and restraint of equipment, components, and piping.

#### 1.6 SUBMITTALS

A. Submit product data under provisions of Section 23 05 00.

B. Include product description, catalog cuts, data sheets, and list of materials for each service, and locations.

C. Submit manufacturer's installation instructions under provisions of Section 23 05 00.

D. Vibration isolation equipment submittal drawings shall include 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.
4. Drawings, as required to show the number and location of seismic restraints for each equipment and specified details of restraints including anchor bolts for mountings and maximum load (static plus dynamic expected at each restraint or snubbing device including fastening devices for the seismic restraints which are capable of maintaining equipment in a captive position when subjected to external seismic forces in any direction for life safety equipment and systems).
5. Drawings, as required, to show the number and location of seismic restraints for each equipment and specific details of restraints including anchor bolts for mountings and maximum load (static plus dynamic at each seismic restraint location).

- E. Certified detail shop drawings and calculations as specified in Section 23 05 00.
- F. Shop drawings shall be signed and sealed by contractor=s licensed professional engineer.
- G. In addition to the requirements on Mechanical General Provisions, the submittal material shall include copies of descriptive data for all products and materials including, but not limited to, the following:
  - 1. Descriptive Data:
    - a. Catalog cuts and data sheets on specific vibration isolators and seismic restraints to be utilized showing compliance with the specifications.
    - b. An itemized list showing the items of equipment or piping to be isolated, the isolator type and model number selected, isolator loading and deflection, and reference to specific drawings showing seismic restraints, base and construction, where applicable.
    - c. An itemized list of non-isolated equipment, piping, and ductwork to be seismically restrained.
    - d. Seismic restraint calculations.
    - e. Professional engineers' stamp verifying design and calculations for seismic restraining systems used.
  - 2. Shop Drawings:
    - a. Drawings showing equipment base constructions for each machine, including dimensions, structural member sizes and support point locations.
    - b. Drawings showing methods of suspension, support guides for piping and ductwork.
    - c. Drawings showing methods for isolation of pipes and ductwork piercing walls and slabs.
    - d. Concrete and steel details for bases, including anchor bolt locations.
    - e. Number and location of seismic restraints and anchors for each piece of equipment, ductwork and piping.
    - f. Specific details of restraints, including anchor bolts for mounting and maximum loading at each location for each piece of equipment, and lengths of ductwork and piping.

#### 1.7 MANUFACTURER RESPONSIBILITIES

- A. Manufacturer of vibration isolation and seismic restraint equipment shall have the following responsibilities:
  - 1. Determine vibration isolation and seismic restraint sizes and locations;
  - 2. Provide piping and equipment isolation systems and seismic restraints, as scheduled or specified;
  - 3. Guarantee specified isolation system deflection;



4. Provide installation instructions, drawings and field supervision to ensure proper installation and performance.
- B. Substitution of internally isolated mechanical equipment in lieu of the specified isolation of this section must be approved for individual equipment units, and is acceptable only if required acceleration loads are certified in writing by the equipment manufacturer, and stamped and sealed by a licensed civil or structural engineer.
- C. Purchased and/or fabricated equipment must be designed to safely accept external seismic forces in any direction for all rigidly and resiliently supported life safety equipment, piping and ductwork without failure and permanent displacement of the equipment. Life safety equipment such as fire pumps, smoke exhaust fans, emergency generators and other life safety designated equipment must be capable of accepting external seismic forces in any direction without permanent displacement or failure of the equipment.

## PART 2 - PRODUCTS

### 2.1 FLOOR MOUNTING OF CENTRIFUGAL FANS & TUBULAR ARRANGEMENT ONE FANS - MOUNTING TYPE I

- A. Each such fan and driving motor shall be mounted on an integral one piece structural base, reinforced as necessary to prevent flexure of the base at start up and during operation of the fan. The unitized structural base for the fan and motor shall include motor slide rails. The structural steel frame complete with seismic restraints shall be drilled and tapped to receive the fan and motor so that the frame shall act as a template.
- B. The structural steel integral base shall be supported on steel spring mountings. These mountings shall be positioned in accordance with the weight distribution to ensure adequate deflection and vibration isolation. Housing or snubbing devices shall not be used to contain the isolation springs.
- C. Isolator types shall be one of the following or as approved:

Type SLF:	M.I.I.
Type OSK:	V.E.C.
Type AN:	V.M.C.I.
- D. Mounting system shall incorporate seismic restraint Type I.

### 2.2 MOUNTING OF CENTRIFUGAL PUMPS AND FLOOR MOUNTED IN-LINE PUMPS - (GREATER THAN 3 HP) - MOUNTING TYPE VIII

- A. Each pump with its driving motor shall be bolted and grouted to a spring supported concrete inertia base reinforced as required.
- B. Each concrete base (rectangular or "T" shape) for horizontally split pumps shall include supports and base elbows for the suction and discharge connections. Base elbows shall be bolted and grouted to the concrete foundation.
- C. Concrete inertia base thickness shall be in accordance with the following schedule:

Motor Size	Minimum Inertia Block Thickness Required
5 HP to 20 HP	6"
20 HP to 60 HP	8"
75 HP to 100 HP	10"
Greater than 100 HP	12"

- D. The spring supported concrete inertia foundation shall be poured within structural perimeter frame (reinforced as necessary) of the required thickness indicated in the above schedule. The structural perimeter frame shall be equipped with height saving brackets, seismic restraints, and stable bare spring isolators having spring diameters no less than 0.8 of the compressed height of the spring at rated load. The mountings shall provide minimum static deflections as indicated on the equipment schedule. The structural perimeter frame, mounting templates, height saving brackets, seismic restraints, and spring system shall be provided as an assembly by the vibration control vendor. There shall be a minimum of 2 inches operating clearance between the pump inertia base and the foundation pad.
- E. Vertical piping loads including water, strainers, and valves between the pump base elbow supports and the suction and discharge header piping shall be supported by the pump base spring isolators without stress or strain to the pump casing.
- F. Mounting assemblies shall be one of the following or as approved:
- |               |          |
|---------------|----------|
| Type KSL:     | M.I.I.   |
| Type A.W.P.F. | V.M.C.I. |
| Type SN-OSK:  | V.E.C.   |
- G. Mounting system shall incorporate Seismic Restraint Type I.

2.3 MOUNTING OF CENTRIFUGAL PUMPS (3 HP OR LESS) - MOUNTING TYPE IX

- A. Pumps 3 HP or less shall be bolted and grouted to rubber-in shear supported reinforced concrete inertia blocks that are a minimum of 6 inches thick and incorporate seismic restraints. Rubber-in-shear isolators shall provide a minimum static deflection of 3/8 inch and shall be protected against corrosion.
- B. Mountings shall be one of the following, or as approved:
- |              |          |
|--------------|----------|
| Type MD:     | M.I.I.   |
| Type RD.     | V.M.C.I. |
| Type V.E.C.: | V.E.C.   |
- C. Provide base elbow supports and structural perimeter frames and reinforcement as described for Mounting Type VIII.
- D. Mounting system shall incorporate seismic restraint Type I.

2.4 MOUNTING OF BOILERS - MOUNTING TYPE X

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- A. Each boiler and refrigeration machine (cooler, condenser, compressor and motor) shall be installed on an integral one-piece steel rigid structural frame which shall be installed on spring supported mountings. Each spring mounting shall be bare and stable and shall provide a minimum static deflection of one inch. All spring mountings shall provide a leveling device, neoprene acoustical pad and built-in vertical stop to prevent spring extension when equipment is removed from the base or drained. Mountings shall be one of the following, or as approved:

Type SLR:	M.I.I.
Type A.W.R.	V.M.C.I.
Type KW:	V.E.C.

- B. Mounting system shall incorporate seismic restraint Type I.

2.5 MOUNTING OF HEAT EXCHANGERS, CONVERTERS AND SECONDARY WATER COOLERS - MOUNTING TYPE XIII

- A. Each such equipment shall be resiliently supported by means of mountings provided between the structural or concrete pier support and the equipment. The mountings shall provide a minimum static deflection of 1 inch. Mountings shall be one of the following, or as approved:

Type SLR	-	M.I.I.
Type AWR	-	V.M.C.I.
Type KW	-	V.E.C.

2.6 PIPING SUPPORTS

- A. All water piping hanger rod isolators shall be one of the following or as approved:

Type PC30	-	M.I.I.
Type VSHL	-	V.M.C.I.
Type T	-	V.E.C.
Type VXPM	-	K.D.C.

- B. Floor supported water piping shall be mounted on one of the following or as approved:

Type SSLR	-	M.I.I.
Type SAWA	-	V.M.C.I.
Type KXL	-	V.E.C.

- C. Floor mounted strainer and storage tank shall be mounted on one of the following or as approved:

Type SLR	-	M.I.I.
Type AWR	-	V.M.C.I.
Type KW	-	V.E.C.

- D. Mountings for the support of ceiling suspended steam and condensate piping shall be one of the following or as approved:

Type RHD	-	V.M.C.I.
Type HD	-	M.I.I.

Type CD - V.E.C.

- E. Floor supported steam and condensate piping including steam pressure reducing stations shall be mounted on one of the following or as approved:

Type ND - M.I.I.  
Type RD - V.M.C.I.  
Type 368SD - V.E.C.

## 2.7 PIPING FLEXIBLE CONNECTORS

- A. Flexible neoprene connectors shall be used on all equipment. They shall be manufactured of multiple plies of nylon tire cord fabric and neoprene both molded and cured in hydraulic rubber presses. No steel wire or rings shall be used as pressure reinforcement. Straight connectors shall have 2 spheres. Connectors up to and including 1-1/2" diameter may have threaded ends. Connectors 2" and larger shall be manufactured with floating galvanized flanges recessed to lock the connector's raised face neoprene flanges. Connectors shall be installed on the equipment side of the shut-off valves.
- B. Connectors shall be rated at the system working pressure, a minimum of 150 psi at 220°F. Flanged equipment shall be directly connected to neoprene elbows in the size range of 2-1/2" through 12" if the piping makes a 90° turn at the equipment. All straight through connections shall be made with twin-spheres properly pre-extended as recommended by the manufacturer to prevent additional elongation under pressure.
- C. Ten inch and smaller sizes operating above 150 psi shall employ control cables with end fittings isolated with 2" thick bridge bearing neoprene washer bushings designed for a minimum burst pressure of 1000 psi. Twelve inch and larger sizes operating above 100 psi shall employ control cables with end fittings isolated with 2" thick bridge bearing neoprene washer bushings designed for a minimum burst pressure of 1000 psi.
- D. Flexible connectors shall be Type MFNEC, MFTFU or MFTNC, manufactured by Mason Industries. Provide control cable assemblies type ACC, as required, manufactured by Mason Industries or an approved equivalent.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Not applicable.

### 3.2 GENERAL

- A. All equipment, piping, etc. shall be mounted on or suspended from approved foundations and supports, all as specified herein, or as shown on the drawings.
- B. All rigidly or resiliently installed equipment, piping, etc., shall be capable of accepting seismic forces of 0.50g acting in any direction on the equipment center of gravity without permanent displacement of the equipment from the installed position.

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- C. All concrete foundations and supports (and required reinforcing and forms) will be furnished and installed by another trade. However, this trade shall furnish shop drawings showing 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 his equipment. Although another trade will complete all concrete work, all such work shall be shown in detail on the shop drawings, prepared by this trade which drawings shall be submitted showing the complete details of all foundations including necessary concrete and steel work, vibration isolation devices, etc.
- D. All floor-mounted equipment shall be erected on a minimum of 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 shall, in all cases, be in turn mounted upon 4" high concrete pads unless specified to the contrary herein. These pads shall be integrally keyed to structural slab.
- E. The vibration isolation systems shall be guaranteed to have the deflection indicated on the schedule on the drawings. Mounting sizes shall be determined by the mounting manufacturer, and the sizes shall be installed in accordance with the manufacturer's instructions.
- F. All mounting systems including seismic restraints exposed to weather and other corrosive environments shall be protected with factory corrosion resistance. All metal parts of mountings (except springs and hardware) to be hot dip galvanized. Springs shall be cadmium plated and neoprene coated. Nuts and bolts shall be cadmium plated.
- G. Where steel spring isolation systems are described in the specifications, the mounting assemblies shall utilize bare springs with the spring diameter not less than 0.8 of the loaded operating height of the spring. Each spring isolator shall be designed and installed so that the ends of the spring remain parallel during and after the spring installation. All isolators shall operate in the linear portion of their load versus deflection curve and have 50% excess capacity without becoming coil bound.
- H. Each seismic restraint, snubbing device or isolation mounting incorporating seismic restraint shall be installed and/or adjusted to provide the minimum operating clearance in all directions to permit the operation of the equipment without objectional noise or vibration to any part of the building structure.
- I. Provide all necessary supports for equipment furnished by this trade. To meet the varying conditions in each case, these supports shall consist of pipe stands, steel angle or strap hangers, saddles, brackets, etc., as approved. All such supports shall have substantial flanges bolted to floor construction; hangers shall be supported from the framing as described herein above. Supports shall be properly located with reference to any supporting pads, legs, etc., of the equipment carried and must be of such number and so distributed as not to bring any undue strains to the equipment. All details shall be as approved.

- J. Provide suitable brackets, pipe stands, piers or other supports for all various float traps, receivers, etc. Also provide suitable supports for all tempering stacks, air filters, mixing and control dampers, etc., securely clamped to steel beams, column or bearing walls. All details of this work shall be as approved. 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.
- K. All vibration isolators and seismic restraint systems must be installed in strict accordance with manufacturer's written instructions and all certified submittal data.
- L. Coordinate work with other trades to avoid rigid contact with building.
- M. Correct, at no additional cost, all installations which are deemed defective in workmanship and material.

### 3.3 SUPPORT OF PIPING AND BOILER BREECHING

- A. The following water, steam and condensate piping shall be resiliently supported:
  - 1. All piping and boiler breeching in equipment room.
  - 2. Piping outside of equipment room within 50 feet of connected rotating equipment.
  - 3. All other piping as described under Hangers, Supports and Guides (Seismic Design) shall be rigidly supported and provided with approved seismic restraints to maintain the piping in a captive attitude without excessive motion. All piping seismic restraints shall be installed with a maximum spacing conforming to the hanger rod spacing schedule as hereinbefore specified or as required to limit transmitted forces to the building structure to acceptable limits.
- B. All other piping including fire pump and sprinkler piping shall be rigidly supported and provided with approved seismic restraints to maintain the piping in a captive attitude without excessive motion.
- C. Resilient diagonal mountings or other approved devices shall be provided as required to limit piping motion due to equipment startup or shut down, to a maximum of 1/8 inch.
- D. Water piping hanger rod isolators shall contain a steel spring in series with a 1/4 inch acoustical neoprene pad within a steel box retainer. The hanger rod isolator assembly shall be rigidly supported from the building structure. The installed hanger rod supported from the spring sub assembly shall not contact the steel box retainer and clearances in the isolator design shall be capable of accepting a 15 misalignment in any direction from the vertical.
- E. The steel spring element of the assembly shall be designed to have a minimum surge frequency of 340 HZ and a minimum deflection of 3/4 inch.

- F. Hanger rod isolators for steam and condensate piping including steam pressure reducing valve stations shall be supported by meals of neoprene-in-shear mountings providing a minimum static deflection of 2 inch.
- G. Where supplementary steel is required to support piping, the supplementary steel shall be sized so that maximum deflection between supports does not exceed 0.08 inches and shall be resiliently supported from the building structure with mountings as described above. Supported piping from the supplementary steel shall be rigidly suspended or supported.
- H. All other water piping hanger rod isolators shall be one of the following, or as approved:
  - Type DNHS - M.I.I.
  - Type RSHP - V.M.C.I.
  - Type SNRC - V.E.C.

#### 3.4 PIPING GUIDES

- A. Steel guides shall be welded to the pipe at a maximum spacing of 90. The outside diameter of the opposing guide bars shall be smaller than the inside diameter of the pipe riser clamp in accordance with standard field construction practice. Each end of the pipe guide shall be rigidly attached to an all directional pipe anchor isolation mounting which in turn, shall be rigidly fastened to the steel framing within the shaft.
- B. The all directional pipe anchor isolation mountings shall consist of a telescoping arrangement of two sizes of steel tubing separated by a minimum of 2 inch thick heavy duty neoprene and canvas duck isolation pad. Vertical restraints shall be provided by similar material arranged to prevent vertical travel in either direction. The allowable load on the isolation material shall not exceed 500 psi.
- C. Mountings shall be Type ADA - Mason Industries, Inc., or as approved.
- D. Low temperature piping guides shall be constructed with a 360 10 gauge metal sleeve around the piping. The thermal insulation requirements for the piping shall be provided between the piping and the sleeve. Heavy duty neoprene and canvas duck isolation pad of thickness equal to thermal insulation requirements shall space the metal sleeve away from the piping with urethane or other suitable thermal insulation provided in the voids between the pipe-sleeve and isolation pan material. The metal sleeve outside diameter shall be smaller than the pipe riser clamp inside diameter in accordance with standard field construction practice. The pipe riser clamp shall be rigidly attached to the steel framing within the shaft.

#### 3.5 ANCHORS

- A. The pipe riser clamp at anchor points, shall be welded to the pipe and to pairs of vertical acoustical pipe anchor mountings which in turn, shall be rigidly fastened to the steel framing in the pipe shaft.

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- B. The acoustical pipe anchor mountings shall be capable of safely accepting loads developed by the installed piping and shall consist of a bolted assembly of steel plates with laminations of 2" thick heavy duty neoprene and canvas duct isolation material. A heat shield shall be provided as required. The isolation material loading shall not exceed 500 psi.
- C. Acoustical pipe anchor mountings shall be Type VPA Mason Industries, Inc., or as approved.

### 3.6 SUPPORTS

- A. Piping supports within shafts shall be provided with suitable bearing plates and two layers of 1/4 inch thick ribbed or waffled neoprene pad loaded for 50 psi maximum. The isolation pads shall be separated with 1/4 inch steel plate.
- B. The isolation pads shall be one of the following or as approved:
  - Type W - M.I.I.
  - Type Shearflex - V.M.C.I.
  - Type 200N - V.E.C.
- C. Piping isolation supports at the base of risers shall be two layers of 2 inch thick heavy duty neoprene and canvas duck isolation pad separated by 1/4 inch thick steel plate. Suitable bearing plates sized to provide a pad loading of 500 psi maximum shall be provided. The stanchion between the pipe and isolation support shall be welded to the pipe and welded or bolted to the isolation support. The isolation support shall be bolted to the floor slab with resilient sleeves and washers.
- D. All pipe support resilient materials shall be HL Mason Industries, Inc., or as approved.

### 3.7 SHEET METAL & PIPING PENETRATIONS OF SHAFTS, FLOOR SLAB AND/OR PARTITIONS

- A. There shall be no direct contact of Sheet Metal or piping with shaft walls, floor slabs and/or partition. All uninsulated sheet metal or piping shall be packed with caulking the full depth of the penetration.

### 3.8 RIGIDLY SUPPORTED EQUIPMENT

- A. The following equipment listed below shall be rigidly supported. The equipment listed is not to be construed as complete.
  - 1. HVAC
    - Ducts
    - Ceiling Suspended Expansion Tanks
    - Piping (except resiliently supported as specified above)



Fuel oil pumps

- B. Floor mounted equipment shall be provided with approved seismic control devices, as required, to prevent overturning or sliding.
- C. Ceiling supported equipment, including ductwork and piping shall be provided with approved seismic control devices to maintain the equipment in a captive attitude.

3.9 SEISMIC RESTRAINTS

- A. All seismic restraints shall be capable of safely accepting the seismic forces for all life safety equipment, external forces without failure and shall maintain equipment, piping, duct and pressure reducing boxes in a captive position. Seismic restraints shall not short circuit isolation systems or transmit objectionable vibration or noise, and shall be provided on all equipment as scheduled on drawings. Calculations by Professional engineer shall be submitted to verify restraint capacities for each piece of equipment.

- B. Equipment mounted on springs do not require additional seismic restraints providing that the spring mountings:

- 1. Comply with general characteristics of spring isolators;
- 2. Have vertical limit stops and are capable of supporting equipment at fixed elevation during equipment erection;
- 3. Incorporate seismic restraint in all directions at specified acceleration loadings.
- 4. Acceptable seismic spring mountings are:
  - Type SSLR -- M.I.I.
  - Type SAWR -- V.M.C.I.
  - Type BXL -- V.E.C.

- C. Seismic Restraint Types:

- 1. Seismic Restraint, Type I :
  - a. All floor mounted and resiliently mounted equipment shall be provided with a minimum of four (4) all-direction seismic snubbers. These snubbers shall be double-acting and located as close as possible to vibration isolators to facilitate attachment to equipment base and building structure.
  - b. Restraints shall be made of plate, structural members or square metal tubing in a welded assembly, incorporating resilient pads. Angle bumpers are not acceptable. System to be field bolted to deck with 1g acceleration capacity.
  - c. Snubbers shall consist of interlocking steel members restrained by shock absorbent rubber materials. The elastomeric materials shall be replaceable and a minimum 3/4" thick. Snubbers shall be manufactured with a minimum 1/4" clearance between equipment base mounted section and structure mounted section.

- d. Snubber capacity at 3/8" deflection shall be three to four times load assigned to snubber group for equipment. Acceptable products are:

Type Z1011 M.I.I.  
 Type SR V.M.C.I.  
 Type DADR V.E.C.O.

2. Seismic Restraint, Type II :

- a. Metal cable type with approved end fastening devices to equipment and structure. System to be field bolted to deck or overhead structural members or deck with aircraft cable and clamps as per SMACNA guidelines.

3.10 PIPING SEISMIC RESTRAINTS

- A. Seismic Restraints as indicated below shall be installed to restrain and protect piping in the event of an earthquake and shall be installed in addition to pipe hangers, brackets and supports. Seismic Restraints shall not be used in lieu of regular hangers and supports as are otherwise required to support the piping.

- 1. Type LS Seismic Restraints shall be installed for all horizontal and vertical pipe at intervals shown in table below except that all pipe runs 25 ft. or longer shall contain at least one (1) Type LS Seismic Restraint or one (1) anchor. Where piping contains valves, strainers or other components whose weight is twice greater than an equivalent length of pipe, supplemental Type LS Seismic Restraints shall be installed to restrain the component.

<u>SIZE PIPE</u>	<u>MAXIMUM SPACING OF SEISMIC RESTRAINTS</u>
Under 2"	20 ft.
22" to 12"	25 ft.

\*Pipe anchors are Seismic Restraints

- 2. Where there are pipe bends, offsets or loops to accommodate thermal expansion and where pipes change direction, anchors shall be installed to sectionalize line to direct thermal movement in desired direction and Seismic Restraints shall be spaced so stress in piping does not exceed 15000 psi. Thermal movements shall be calculated as length of run x coefficient of expansion for greatest temperature change or a minimum of 100 F. For simple "L" bend configurations, the length of leg between elbow and first Seismic Restraint or rigid support both sides of elbow shall be a minimum distance in feet of 6.3 times the square root of "A" where "A" = the thermal movement in inches times the pipe O.D. in inches. In all cases where pipe bends, offsets or loops are being used to accommodate thermal movement and contract drawings do not detail dimensions of loop or offset nor location of Seismic Restraints, contractor shall dimension loop or offset and locate Seismic Restraints and submit calculations indicating piping stress does not exceed 15000 psi.

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3. Anchors to provide axial restraint shall be installed for all pipe runs over 100 ft. or where weight of a straight section of pipe including pipe, fittings, valves, contents and insulation exceeds a weight in pounds of 500 x nominal pipe diameter (for example, 6000 lb. for 12" pipe, 1500 lb. for 3" pipe). Anchors shall also be installed as described to sectionalize the line to properly accommodate thermal movements, and as required for expansion joints.
4. Where piping is connected to equipment, the piping from equipment nozzle to first Type LS Seismic Restraint shall be designed to accommodate amount of movement permitted by equipment Seismic Restraints. If length of piping between equipment nozzle and first Type LS Seismic Restraint exceeds maximum spacing as indicated above, stress calculations must be performed to assure that pipe stress does not exceed 15000 psi or flexible connectors must be installed to accommodate expected movement.
5. Type LS Seismic Restraints shall consist of Thunderline Corp. Link-Seal (or approved equal) interlocking synthetic rubber links installed according to manufacturer's instructions in a solid or split pipe sleeve constructed of standard weight pipe or equivalent thickness steel plate rigidly attached to building structure. Style C Link-Seal constructed with EPDM rubber shall be used for all systems operating below 250 F and Style T Link-Seal constructed with silicone rubber and metal pressure plates shall be used for steam, condensate, high temperature hot water (HTHW) and all systems operating above 250 psig. Where piping is insulated, Link-Seal is to be installed directly on the carrier pipe with the insulation installed to abut the links. Where vapor barriers must be retained, the vapor barrier material should be secured to sleeve or in the case of split sleeves, extend over the sleeve.
6. The attachment to structure must be designed to accommodate the forces and moments acting in all directions at pipe centerline using an allowable stress of steel components of 1/5 minimum tensile strength or 9500 psi for carbon steel of unknown origin and calculated as follows, but with a minimum force in pounds of 300 x nominal pipe diameter.
  - a. For straight sections of pipe, a force in pounds equal to weight of pipe between Seismic Restraints plus proportional weight of any valves and fittings.
  - b. For guides installed immediately after an elbow where there is no anchor on the other leg, a force in pounds equal to the weight of the other leg of pipe for which movement is being restrained.
  - c. For trapeze hangers supporting more than one pipe, multiple sleeves may be attached to the base of the trapeze, however, the attachments to structure must be designed for total load imposed by all pipes attached to trapeze.
7. Attachments to structure shall be designed to accommodate force and moment as indicated and shall consist of individual members such as pipe, channels, angles or I-beams in conjunction with at least two additional vertical struts for each vertical member, one (1) longitudinal and one (1) radial to axis of pipe.

8. In all cases, attachments to structure shall be approved by the Structural Engineer with drawings submitted for approval. Loads and details of attachment to structure shall be submitted to structural engineer for approval and coordination.
9. Anchors shall be designed to accommodate forces as indicated plus any forces imposed by expansion joints or pipe bends and loops. Loads and details of attachment to structure shall be submitted to structural engineer for coordination.

### 3.11 SCHEDULE

- A. As described under products.
- B. Schedule shall be submitted by Contractor=s licensed professional engineer. Schedule shall list all equipment with associated isolators and seismic restraints as well as static deflections of each piece of equipment when mounted on its isolators. Contractor=s licensed professional engineer shall indicated on schedule if equipment only required seismic restraints, requires seismic restraints as well as vibration isolators, mounted on steel dunnage, directly mounted to pad or mounted on concrete filled inertia base.

### 3.12 VIBRATION ISOLATION TYPES

- A. Note that vibration isolation devices are included herein for construction purposes only. Vibration isolation is specified under another section of this work.
- B. Type A: Spring Isolator B Free Standing VMC: A\*C AB: SW
  1. Spring isolators shall be free standing and laterally stable without any housing and complete with a molded elastomeric cup or 3@ elastomeric acoustical friction pad between the bottom of isolator and the support.
  2. All mountings shall have leveling bolts that must be rigidly bolted to the equipment.
  3. Spring diameters shall be no less than 0.8 of the compressed height of the spring at rated load.
  4. Springs shall have a minimum additional travel to solid equal to 50% of the operating deflection.
  5. Submittals shall include spring diameters, deflection, compressed spring height and solid spring height.
- C. Type B: Seismically Restrained Spring Isolator VMC: AWRS, ASCM AB: CT, SWSR

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1. Restrained spring mountings shall have a Type A spring isolator within a rigid housing that includes vertical limit stops to prevent spring extension with weight is removed. The housing shall serve as blocking during erection. A minimum clearance of 3@ shall be maintained around restraining bolts and internal elastomeric deceleration bushings so as not to interfere with the spring action. Limit stops shall be out of contact during normal operation. Since housings may be bolted or welded in position there must be an internal isolation pad. Housing shall be designed to resist all seismic forces.
- D. Type C: Combination Spring/Elastomer Hanger Isolator (30° Type) VMC: RSH30 AB: BRSA
1. Hangers shall consist of rigid steel frames containing minimum 13@ thick elastomeric elements at the top and a steel spring with general characteristics as in Type A. The Durulene™ element shall have resilient bushings projecting through the steel box.
  2. Spring diameters and hanger box lower hole sizes shall be large enough to permit the hanger rod to swing through a 30° arc from side to side before contacting the rod bushing and short circuiting the spring.
  3. Submittals shall include a hanger-drawing showing the 30° capability.
  4. Hanger locations requiring pre-compression for holding piping at fixed elevation shall be type pre-compressed or pre-positioning for all manufacturers.
- E. Type D: Elastomer Double Deflection Hanger Isolator VMC: RHD AB: HRD/BRB
1. Molded (minimum 1 3@ thick) Durulene™ element with projecting bushing lining the rod clearance hole. Static deflection at rated load shall be a minimum of 0.35@.
  2. Steel retainer box encasing elastomeric mounting capable of supporting equipment up to four times the rated capacity of the element.
- F. Type E: Combination Spring/Elastomer Hanger Isolator VMC: RSH AB: BSR
1. Spring and Durulene™ elements in a steel retainer box with the features as described for Type C and D isolators.
  2. Hanger locations requiring pre-compression for holding piping at fixed elevation shall be type pre-compressed or pre-positioning for all manufacturers.
  3. 30° angularity feature is not required.
- G. Type F: Seismically Restrained Elastomer Floor Isolator VMC: RSM, MB AB: RSM

1. Bridge-bearing elastomeric mountings shall have a minimum static deflection of 0.2@ and all directional seismic capability. The mount shall consist of a ductile iron or aluminum casting containing two separated and opposing molded elastomeric elements. The elements shall prevent the central threaded sleeve and attachment bolt from contacting the casting during normal operation. The shock-absorbing elastomeric materials shall be compounded to bridge-bearing specification.
- H. Type G: Pad Type Elastomer Isolator (Standard) VMC: Maxiflex AB: Maxiflex
1. One layer of :@ thick elastomeric pad consisting of 2@ square modules for size required.
  2. Load distribution plates shall be used as required.
  3. Bolting required for seismic compliance. Elastomeric and duck washers and bushings shall be provided to prevent short-circuiting.
- I. Type H: Pad Type Elastomer Isolator (High Density) VMC: Fabriflex AB: NDB
1. Laminated canvas duck & neoprene, maximum loading 1000 psi, minimum 2@ thick.
  2. Load distribution plate shall be used as required.
  3. Bolting required for seismic compliance. Elastomeric and duck washers and bushings shall be provided to prevent short-circuiting.
- J. Type I: Thrust Restraints VMC: RSHTR AB: TRK
1. A spring element similar to Type A isolator shall be combined with steel angles, backup plates, threaded rod, washers and nuts to produce a pair of devices capable of limiting movement of air handling equipment to 3@. Hardware may be supplied by contractor.
  2. Restraint shall be easily converted in the field from compression type to tension type.
  3. Thrust restraints shall be installed on all cabinet fan heads, axial or centrifugal fans whose thrust exceeds 10% of unit weight.
- K. Type J: Pipe Anchors VMC: MDPA AB: AB/AG
1. All-directional acoustical pipe anchor, consisting of two sizes of steel tubing separated by a minimum 2@ thick 60 durometer elastomer.
  2. Vertical restraint shall be provided by similar material arranged to prevent vertical travel in either direction.
  3. Allowable loads on the isolation material should not exceed 500 psi and the design shall be balanced for equal resistance in any direction.

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L. Type K: Pipe Guides VMC: PG AB: PG

1. Pipe guides shall consist of a telescopic arrangement of two sizes of steel tubing separated by a minimum 2@ thickness of 60-durometer elastomer.
2. The height of the guides shall be preset with a shear pin to allow vertical motion due to pipe expansion or contraction. Shear pin shall be removable and re-insertable to allow for selection of pipe movement.
3. Guides shall be capable of  $\nabla 1 \frac{5}{8}$ @ motion, or to meet location requirements.

M. Type L: Isolated Pipe Hanger System VMC: CIH, CIR, TIH, PIH AB: CIH, CIR, TIH, PIH

1. Pre-compressed spring and elastomer isolation hanger combined with pipe support into one assembly. Replaces standard clevis, single or double rod roller, or double rod fixed support.
2. Spring element (same as Type A) with steel lower spring retainer and an upper elastomer retainer cup with an integral bushing to insulate support rod from the isolation hanger.
3. The elastomeric element under the lower steel spring retainer shall have an integral bushing to insulate the support rod from the steel spring retainer.
4. Hangers shall be designed and constructed to support loads over three times the rated load without failure.
5. Systems shall be pre-compressed to allow for rod insertion and standard leveling.

3.13 SEISMIC RESTRAINT TYPES

A. Type I: Spring Isolator, Restrained VMC: ASCM, AWRS AB: CT, SWSR

1. Refer to vibration isolation Type B.

B. Type II: Seismically Restrained Elastomer Floor Isolator VMC: RSM AB: RSM

1. Refer to vibration isolation Type F.

C. Type III: All Directional Seismic Snubber VMC: SR AB: ER

1. All-directional seismic snubbers shall consist of interlocking steel members restrained by an elastomeric bushing of Durulene<sup>TM</sup>. Bushing shall be replaceable and a minimum of 3@ thick. Rated loading shall not exceed 1000 psi. A minimum air gap of 1/8@ shall be incorporated in the snubber design in all directions before contact is made between the rigid and resilient surfaces. Snubber end caps shall be removable to allow inspection of internal clearances. Elastomeric bushings shall be rotated to insure no short circuits exist before systems are activated.

D. Type IV: Floor or Roof Anchorage VMC: Cast-In Plates AB: FA

1. Rigid attachment to structure utilizing wedge type anchor bolts, anchored plates machine screw, bolting or welding. Power shots are unacceptable.

E. Type V: Seismic Cable Restraints VMC: SCR AB: ERS

1. Seismic Cable Restraints shall consist of galvanized steel aircraft cables sized to resist seismic loads with a minimum safety factor of two and arranged to provide all-directional restraint. Cable end connections shall be steel assemblies that swivel to final installation angle and utilize two clamping bolts to provide proper cable engagement. Cables must not be allowed to bend across sharp edges. Single arm braces with resilient bushings can be substituted for seismic cable restraints.

F. Type VI: Rigid Arm Brace VMC: SAB AB: SAB

1. Seismic solid braces shall consist of steel angles or channels to resist seismic loads with a minimum safety factor of two and arranged to provide all directional restraint. Seismic solid brace end connectors shall be steel assemblies that swivel to the final installation angle and utilize two through bolts to provide proper attachment spaced to ICBO standards for attachment to concrete.

G. Type VII: Internal Clevis Cross Brace VMC: ICB AB: SAB

1. Internal clevis cross braces at seismic locations shall be pre-cut pipe sized for internal dimensions.

H. Type VIII: Seismic Waterproof Foundation Wall Sleeve VMC: SWFWS AB: SWFWS

1. Seismic waterproof foundation wall sleeves shall consist of two elastomeric sleeves that shall be mounted both inside and out of the vertical foundation wall. The conical design shall have a suitably waterproof means of fastening to both concrete and to its concentric utility pipe. Allowable vertical drift shall be plus or minus 2@ from the installed neutral point along the vertical  $\Delta y$ @ axis. All fittings shall be stainless steel or galvanized.

### 3.14 EQUIPMENT BASES

A. General

1. All curbs and roof rails are to be bolted or welded to the building steel or anchored to the concrete deck (minimum thickness shall be 4@) for resisting wind and seismic load forces in accordance with the project location. (Fastening to metal deck is unacceptable)

B. Base Types



1. Type B-1: Integral Structural Steel Base VMC: WFB AB: SFB/WSB
  - a. Rectangular bases are preferred for all equipment.
  - b. Centrifugal refrigeration machines and pump bases may be T or L shaped where space is a problem. Pump bases for split case and end suction pumps shall include supports for suction and discharge elbows.
  - c. All perimeter members shall be structural steel beams with a minimum depth equal to 1/12 of the longest dimension of the base.
  - d. Base depth need not exceed 12@ provided that the deflection and misalignment is kept within acceptable limits as determined by the manufacturer.
  - e. Height saving brackets shall be employed in all mounting locations to provide a minimum base clearance of 2@.
  
2. Type B-2: Concrete Inertia Base VMC: MPF/WPF AB: CPF
  - a. Vibration isolation manufacturer shall furnish rectangular welded or bolted modular steel concrete pouring forms for floating and inertia foundations.
  - b. Bases for split case and end suction pumps shall be large enough to provide for suction and discharge elbows.
  - c. Bases shall be a minimum of 1/12 of the longest dimension of the base but not less than 6@.
  - d. The base depth need not exceed 12@ unless specifically recommended by the base manufacturer for mass or rigidity. Forms shall include a minimum concrete reinforcing consisting of 2@ bars welded in place a maximum of 12@ on centers running both ways in a layer 1 2@ above the bottom.
  - e. Forms shall be furnished with steel templates to hold the anchor bolts sleeves and anchors while concrete is being poured.
  - f. Height saving brackets shall be employed in all mounting locations to maintain a 2@ minimum clearance below the base.
  
3. Type B-3: Seismic Isolation Curb VMC: P6200/P6300 AB: RTIC  
Option: Sound Package 1 & 2 VMC/AB-RPFMA/SRPFMA
  - a. Curb mounted rooftop equipment shown on isolation schedule shall be mounted on structural seismic spring isolation curbs. The upper frame must provide continuous support for the equipment and must be captive so as to resiliently resist wind and seismic forces. The lower frame must accept point support for both seismic attachment and leveling. The upper frame must be designed with positive fastening provisions (welding or bolting), to anchor the roof top unit to the curb, which will not violate the National Roofing Contractor=s Association (NRCA) ratings of the membrane waterproofing. Sheet metal screws are only acceptable if all provisions in Section 1.4, Article B, 5h, Design Seismic Loads, are met. Contact points between the roof top unit, the curb and the building=s structure shall show load path through those locations only.
  - b. All directional elastomeric snubber bushings shall be minimum of 3@ thick. Steel springs shall be laterally stable and rest on 3@ thick elastomeric acoustical pads.

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- c. Hardware must be plated and the springs shall be powder coated or cadmium plated.
- d. The curb=s waterproofing shall be designed to meet all NRCA requirements.
- e. All spring locations shall have access ports with removable waterproof covers and all isolators shall be adjustable, removable and interchangeable.
- f. Isolated curbs shall be supplied with a continuous air seal between the upper floating member and the stationary wood nailer.

Option #1: Where sound barrier package is required, curb shall have full size lay in attenuation panels having a minimum STC rating of 60 when combined with the roof deck=s rating. Attenuation system shall add a full sound attenuation structural floor to the curb capable of spanning the curb=s width and designed for live loads of 20 psf. Panels shall not weigh more than 6 psf. The 4@ nominal galvanized panel shall be joined to allow for airtight construction and additionally shall have a support system where the panels are used below an outside condenser section. Panels shall be waterproof for both outdoor and indoor application. The space blow, the curb panels and the roof deck shall have 4@ of insulation contractor furnished and installed.

Curb wall construction shall utilize the roofer=s standard insulation where curbs use the TAS open thermal acoustical screening system. Solid wall curbs shall use 2@ of the factory duct liner installed by the curb manufacturer. The entire curb shall have a continuous neoprene elastomeric air seal. Type RPFMA shall use an open return system with the roof return opening set as far as possible from the unit=s return opening.

Option # 2: When curb type SRPFMA (Supply Return Plenum Construction) is required, in addition to Option # 1 the walls of the supply section will use 2@ sound attenuating panels as well as a continuous inner elastomeric air seal and isolated plenum divider. Both supply and return ducts shall seal directly to curb base floor attenuation panels.

4. Type B-4: Seismic Non-Isolated Curbs VMC: P6000 AB: RTC

Option: Sound Package VMC-RPFMA/SRPFMA System

- a. Seismic curbs shall have all provisions as Type B-3 curbs with the exception of spring isolation.
- b. System shall be designed for positive anchorage or welding of equipment to supports and welding of supports to the building steel.

5. Type B-5: Isolated Equipment Supports VMC: R7200/R7300 AB: 7200/R7300

- a. Continuous structural equipment support rails that combine equipment support and isolation mounting into one unitized roof flashed assembly with all features as described for Type B-3.

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- b. System shall be designed for positive anchorage or welding of equipment to supports and welding of supports to the building steel.
- 6. Type B-6: Non-Isolated Equipment Supports VMC: R7000 AB: R7000
  - a. This shall have the same provisions as Type B-5 without the spring isolation.
- 7. Type B-7: Computer Room Unit Base VMC: CRC AB: CRC
  - a. Computer Room air conditioning units shall be welded or bolted to welded structural steel stands having a minimum 0.5 AG@ certified lateral acceleration capabilities.
  - b. Durulene<sup>TM</sup> elastomer isolated stands shall have 1@ of adjustment to accommodate floor irregularities and 0.25@ of static deflection.
  - c. Bolting or welding is required to meet seismic criteria.
  - d. Stands to have positive fastening provisions for bolting of computer room unit to seismic floor stand and fastening of seismic isolated floor stand to structure.

3.15 FLEXIBLE CONNECTORS

A. Type FC-2: Flexible Stainless Steel Hose VMC: BS AB: SSFP/SSPM

- 1. Flexible stainless steel hose shall have stainless steel braid and carbon steel fittings. Sizes 3@ and larger shall be flanged. Smaller sizes shall have male nipples.

B. Type BC-2 connector shall be braided bronze for freon connections.

- 1. Minimum lengths shall be as tabulated:

Flanged	Male Nipples		
3 x 14	10 x 26	2 x 9	1 2 x 13
4 x 15	12 x 28	: x 10	2 x 14
5 x 19	14 x 30	1 x 11	2 2 x 18
6 x 20	16 x 32	1 3 x 12	8 x 22

- 2. Hoses shall be installed on the equipment side of the shut-off valves horizontally and parallel to the equipment shafts wherever possible.

3.16 EXAMINATION

- A. All areas that will receive components requiring vibration control, seismic or wind load bracing shall be thoroughly examined for deficiencies that will affect their installation or performance. Such deficiencies shall be corrected prior to the installation of any such system.

- B. Examine all "rough ins" including anchors and reinforcing prior to placement.

### 3.17 COMPONENT INSTALLATION

#### A. General

1. All vibration isolators and seismic, wind restraint systems must be installed in strict accordance with the manufacturer's written instructions and all certified submittal data. Installation of vibration isolators and seismic, wind restraints must not cause any change of position of equipment, piping or ductwork resulting in stresses or misalignment.
2. No rigid connections between equipment and the building structure shall be made that degrades the noise and vibration control system specified herein.
3. The contractor shall not install any isolated equipment, piping or duct, which makes rigid connections with the building unless isolation is not specified. "Building" includes, but is not limited to, slabs, beam, columns, studs and walls.
4. Coordinate work with other trades to avoid rigid contact with the building.
5. Over stressing of the building structure must not occur because of overhead support of equipment. Contractor must submit loads to the structural engineer of record for approval. General bracing may occur from flanges of structural beams, upper truss cords in bar joist construction and cast in place inserts or wedge type drill-in concrete anchors.
6. Seismic cable restraints shall be installed slightly slack to avoid short-circuiting the isolated suspended equipment or piping.
7. Seismic cable assemblies are installed taut on non-isolated systems. Seismic single arm braces may be used in place of cables on rigidly attached systems but can also be used on isolated systems when incorporating resilient bushings.
8. At locations where seismic cable restraints or seismic single arm braces are located, the support rods must be braced when necessary to accept compressive loads. See Table "E."
9. At all locations where seismic cable braces and seismic cable restraints are attached to the pipe clevis, the clevis bolt must be reinforced with pipe clevis cross bolt braces or double inside nuts if required by seismic acceleration levels.
10. Vibration isolation manufacturer shall furnish integral structural steel bases as required. Independent steel rails are not permitted.
11. Air handling equipment and centrifugal fans shall be protected against excessive displacement which results from high air thrust in relation to the equipment weight. Horizontal thrust restraints shall be those described in the specification when horizontal motion exceeds 3/8."

12. Special and Periodic Inspections for items listed in Section 1.4, Article B shall be conducted and submitted on a timely basis.

### 3.18 EQUIPMENT INSTALLATION

- A. Equipment shall be isolated and/or restrained as per Tables A-E at the end of this section.
- B. Place floor mounted equipment on 4" high concrete housekeeping pads properly sized and doweled or expansion shielded to the deck to meet acceleration criteria (see Section 1.4). Anchor isolators and/or bases to housekeeping pads. Concrete work is specified under that section of the contract documents.
- C. Additional Requirements
  1. The minimum operating clearance under all isolated components bases shall be 2".
  2. All bases shall be placed in position and supported temporarily by blocks or shims, as appropriate, prior to the installation of the equipment, isolators and restraints.
  3. The equipment shall be installed on blocks to the operating height of the isolators. After the entire installation is complete and under full load including water, the isolators shall be adjusted so that the load is transferred from the blocks to the isolators. Remove all debris from beneath the equipment and verify that there are no short circuits of the isolation. The equipment shall be free to move in all directions, within the limits of the restraints.
  4. Ceilings containing diffusers or lighting fixtures must meet seismic requirements by using earthquake clips or other approved means of positive attachment to secure diffuser and fixtures to T-bar structure.
  5. All floor or wall-mounted equipment and tanks shall be restrained with Type V restraints.

### 3.19 PIPING AND DUCTWORK ISOLATION

- A. Vibration Isolation of Piping

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1. HVAC Water Piping: All spring type isolation hangers shall be precompressed if isolators are installed prior to fluid charge. If installed afterwards, field pre-compressed isolators can be used. All HVAC piping in the machine room shall be isolated as well as pressurized runs in other locations of the building 6" and larger. Horizontal pressurized runs in all other locations of the building shall be isolated by Type E hangers. Floor supported piping shall rest on Type Bisolators. Heat exchangers and expansion tanks are considered part of the piping run. The first 3 isolators from the isolated equipment will have the same static deflection as specified for the mountings under the connected equipment. If piping is connected to equipment located in basements and hangs from ceilings under occupied spaces, the first 3 hangers shall have 0.75" deflection for pipe sizes up to and including 3", 1 3/8" deflection for pipe sizes thereafter. Where column spacing exceeds 35', isolation hanger deflection shall be 2 2" for pipes exceeding 3" diameter. Type L hangers may be substituted for the above where isolation hangers are required.
2. Steam and Condensate Piping: All ceiling suspended piping in the mechanical equipment room shall be isolated with Type D hangers. All floor supported piping shall be supported with Type F isolators.
3. Plumbing Water Lines. Plumbing water lines in the machine room shall only be isolated if connected to isolated equipment. (See Table B.) Isolator type shall be as listed in Article 1, above.
4. Riser Location: All risers shall be supported on Type J or K anchors or guide restraints positively attached to both the riser and structure. Spiders welded to the pipe can substitute for Type K guides using J Type anchors.
5. Control Air Piping: Where control air piping is connected to mechanical piping equipment shall be flexibly connected in horizontal and vertical plane with Type FC-2 flexible connectors.
6. Gas lines shall not be isolated.
7. Fire protection lines shall not be isolated.

B. Seismic Restraint of Piping, Conduit, Bus Duct and Cable Tray.

1. All high hazard and life safety pipe regardless of size such as fuel oil piping, fire protection mains, gas piping, medical gas piping and compressed air piping shall be seismically restrained or braced. Type V seismic cables restraints or resilient single arm braces shall be used if piping is isolated. Type V seismic cable restraints of Type VI single arm braces may be used on non-isolated piping.

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2. Seismically restrain piping located in boiler rooms, mechanical equipment rooms and refrigeration equipment rooms that is 1 3/4" I.D. and larger. Type V seismic cables restraints or resilient single arm braces shall be used if piping is isolated. Type V seismic cable restraints or Type VI single arm braces may be used on unisolated piping.
3. Seismically restrain all other piping 2" diameter and larger. Type V seismic cables restraints or resilient single arm braces shall be used if piping is isolated. Type VI seismic cable restraints or single arm braces may be used on unisolated piping.
4. See Table D for maximum seismic bracing distances.
5. Multiple runs of pipe on the same support shall have distance determined by calculation.
6. Rod braces shall be used for all rod lengths as listed in table "E."
7. Clevis hangers shall have braces placed inside of hanger at seismic brace locations.
8. Where thermal expansion is a consideration, guides and anchors maybe used as transverse and longitudinal restraints provided they have a capacity equal to or greater than the restraint loads in addition to the loads induced by expansion of contraction.
9. For fuel oil and all gas piping, transverse restraints must be at 20' maximum and longitudinal restraints at 40' maximum spacing.
10. Transverse restraint for one pipe section may also act as longitudinal restraint for a pipe section of the same size connected perpendicular to it if the restraint is installed within 24" of the elbow or TEE or combined stresses are within allowable limits at longer distances.
11. Hold down clamps must be used to attach pipe to all trapeze members before applying restraints. Use Type V or VI restraint, if trapeze is smaller than 48" long.
12. Branch lines may not be used to restrain main lines.
13. All PVC and glass pipe less than 6" are braced only if the pipe use involves hazardous or toxic materials. All other PVC and glass pipe greater than 6" shall be braced at 20' transversely and 40' longitudinally with bottom shields.
14. All fire protection branch lines shall be end tied.
15. Where pipe passes through a two-sided sheetrock wall, the wall, if tight to the pipe, shall act as a lateral/transverse brace for pipe sizes up to and including 4", provided hole is reinforced with metal corner bead.

16. Where horizontal pipe crosses a building's drift expansion joint, allowance shall be part of the design to accommodate differential motion.
17. Vertical pipe rises between floors shall have their differential movement part of the seismic design for building drift.
18. For horizontal passage of all underground utilities through building's foundation wall, all pipe shall pass freely through an oversized opening and waterproofed accordingly to accommodate maximum allowable building drift. (Seismic Restraint Type VIII).

C. Vibration Isolation of Ductwork

1. All discharge runs for a distance of 50' from the connected equipment shall be isolated from the building structure by means of Type E combination spring elastomer hanger or Type A floor spring isolators. Spring deflection shall be a minimum of 0.75".
2. All duct runs having air velocity of 1500 feet per minute (fpm) or more shall be isolated from the building structure by Type E combination spring elastomer hangers or Type A floor spring supports. Spring deflection shall be a minimum of 0.75"

D. Seismic Restraint of Ductwork

1. Restrain rectangular ductwork with cross sectional area of 6 square feet or larger. Type V seismic cable restraints or Type VI single arm braces shall be used on this duct. Duct which serves a life safety function or carries toxic materials in an "Essential or High Hazard Facility" must be braced with no exceptions regardless of size or distance requirements.
2. Restrain round ducts with diameter's of 28" or larger. Type V seismic cable restraints or Type VI single arm braces.
3. Restrain flat oval ducts the same as rectangular ducts of the same nominal size.
4. See Table D for maximum seismic bracing distances.
5. Duct must be reinforced at the restraint locations. Reinforcement shall consist of an additional angle on top of the ductwork that is attached to the support hanger rods. Ductwork is to be attached to both upper angle and lower trapeze. Additional reinforcing is not required if duct sections are mechanically fastened together with frame bolts and positively fastened to the duct support suspension system.
6. A group of ducts may be combined in a larger frame so that the combined weights and dimensions of the ducts are less than or equal to the maximum weight and dimensions of the duct for which bracing details are selected.



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7. Walls, including gypsum board non-bearing partitions, which have ducts running through them, may replace a typical transverse brace. Provide channel framing around ducts and solid blocking between the duct and frame.
8. If ducts are supported by angles, channels or strut, duct shall be fastened to same at seismic brace locations in lieu of duct reinforcement.

3.20 FIELD QUALITY CONTROL, INSPECTION

- A. All Independent Special and Periodic Inspections shall be performed by the City of New York.
- B. Upon completion of installation of all vibration isolation devices, the City of New York shall inspect the completed project and certify in writing to the Contractor that all systems are installed properly, or require correction. The Contractor shall submit a report to the Commissioner, including the representative's report, certifying correctness of the installation or detailing corrective work to be done. The report shall be stamped with Contractor's Licensed Engineer.

TABLE A HVAC EQUIPMENT										
ON GRADE, BASEMENT OR SLAB ON GRADE							ABOVE GRADE			
EQUIPMENT (See Note)		MTNG	ISOL	DEFL (in.)	BASE	RESTR	ISOL	DEFL (in.)	BASE	RESTR
Base Mounted Pumps	To 15 HP	Flr	B	0.75	B-2	IV	B	0.75	B-2	IV
	>15 HP	Flr	B	0.75	B-2	IV	B	1.50	B-2	IV
Boilers		Flr	G	0.1	--	IV	B	0.75	--	IV
Centrif. Fans Arr. 1 & 3	Class 1	Flr	B	0.75	B-1	IV	B	See Guide	B-1	IV
	Class 2 & 3	Flr	B	0.75	B-2	IV	B	See Guide	B-2	IV
Condensate Pumps		Flr	F	0.2	If req.	IV	F	0.2	If req.	IV

Minimum Deflection Guide for Table A

Units Lowest R.P.M.	DEFLECTION
Less than 400	3.50 <sup>e</sup>
401 to 600	2.50 <sup>e</sup>
601 to 900	1.50 <sup>e</sup>
OVER 900	0.75 <sup>e</sup>

Note for TABLE A: GENERAL:  
 ISOL= ISOLATOR  
 DEFL= DEFLECTION  
 RESTR = SEISMIC RESTRAINT

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 FOR RIGIDLY SUPPORTED EQUIPMENT

**MTNG= MOUNTING**

**ALL DEFLECTIONS INDICATED ARE IN INCHES.**

- C. All vibration isolators and seismic restraint systems must be installed in strict accordance with the manufacturer's written instructions and all certified submittal data.
- D. Installation of vibration isolators and seismic restraints must not cause any change of position of equipment, piping or ductwork resulting in stresses or misalignment.
- E. No rigid connections between equipment and the building structure shall be made that degrades the noise and vibration control system specified, under another section of the work.
- F. The contractor shall not install any isolated equipment, piping or duct, which makes rigid connections with the building. A Building includes, but is not limited to, slabs, beams, columns, studs and walls.
- G. Coordinate work with other trades to avoid rigid contact with the building.
- H. Vibration isolation manufacturer shall furnish integral structural steel bases as required. Independent steel rails are not permitted.
- I. Where piping passes through walls, floors or ceilings, the contractor shall provide wall seals or resilient packed pipe sleeves.
- J. Air handling equipment and centrifugal fans shall be protected against excessive displacement which results from high air thrust in relation to the equipment weight. Horizontal thrust restraints shall be those described in the specification when horizontal motion exceeds 3/8 inches.
- K. Special and Periodic Inspections shall be conducted and submitted on a timely basis.

**3.21 EQUIPMENT RESTRAINTS**

- A. Equipment shall be isolated and restrained.
- B. Place floor mounted on a minimum of 4 inches (10 cm) high concrete housekeeping pads properly doweled or expansion shielded to the deck to meet acceleration criteria. Anchor isolators and/or bases to housekeeping pads.
- C. Ceilings containing diffusers must meet seismic zone requirements by using earthquake clips or other approved means of positive attachment to secure diffuser to T-bar structure.
- D. Additional Requirements
  - 1. The minimum operating clearance under all isolated components bases shall be 2 inches (5 cm).
  - 2. All floor or wall mounted equipment and tanks shall be restrained.

### 3.22 PIPING AND DUCTWORK RESTRAINTS

#### A. Seismic Restraint of Piping.

1. All high hazard and life safety pipe regardless of size such as fuel oil piping, fire protection mains, gas piping, medical gas piping and compressed air piping shall be seismically restrained. There are no exclusions for size or distance in this category.
2. Seismically restrain all piping located in boiler rooms mechanical equipment rooms and refrigeration equipment rooms that is 1-1/4 inches (3 cm) I.D. and larger.
3. Seismically restrain all other piping 2-1/2 inches (6 cm) diameter and larger.
4. Multiple runs of pipe on the same support shall have distance determined by calculation.
5. Rod braces shall be used for all rod lengths greater than 3 inches (7 cm).
6. Clevis hangers shall have spacers placed inside of hanger at seismic brace locations.
7. Where thermal expansion is a consideration, guides and anchors may be used as transverse and longitudinal restraints provided they have a capacity equal to or greater than the restraint loads in addition to the loads induced by expansion or contraction.
8. For fuel oil and gas piping, transverse restraints must be at 20 feet (6m) maximum and longitudinal restraints at 40 feet (12m) maximum spacing.
9. Transverse restraint for one pipe section may also act as a longitudinal restraint for a pipe section of the same size connected perpendicular to it if the restraint is installed within 24 inches (61 cm) of the elbow or TEE or combined stresses are within allowable limits at longer distances.
10. Hold down clamps must be used to attach pipe to all trapeze members before applying restraints.
11. Branch lines may not be used to restrain main lines.
12. All PVC and glass pipe less than 6 inches (15cm) are braced only if the pipe use involves hazardous or toxic materials. All other PVC and glass pipe greater than 6 inches shall be braced at 20 feet (6m) transversely and 40 feet (12m) longitudinally with bottom shields.

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END OF SECTION 23 05 48

FOUNDATIONS, VIBRATION ISOLATION, & SUPPORTS  
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**SECTION 23 05 50 - BASIC MECHANICAL MATERIALS AND METHODS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

A. This Section includes the following basic mechanical materials and methods to complement other Division 23 Sections.

1. Piping materials and installation instructions common to most piping systems.
2. Delivery, Storage and Handling
3. Protection and Cleaning
4. Fire and smoke Detection
5. Sequencing and scheduling
6. Access Doors in Finished construction.
7. Dielectric Fittings.
8. Pipe and Pipe Fittings.
9. Joining Materials
10. Piping Specialties
11. Labeling and identifying mechanical systems and equipment is specified in Division 23.
12. Grout for equipment installations.
13. Drive Guards
14. Electrical Motors, Motor Controls and Wiring
15. Firestopping
16. Tools and lubricants
17. Dampers - General
18. Damper Terminal Strips
19. Automatic Control Valves - General
20. Piping Systems - Common Requirements.
21. Pressure Testing - All Piping Systems.

22. Equipment Installation - Common Requirements.
23. Labeling and Identifying
24. Painting and finishing.
25. Pans and Drains over Electrical Equipment.
26. Concrete Bases
27. Erection of Metal Supports and Anchorage
28. Welding procedure.
29. Catwalks, platforms and ladders.
30. Excavation and backfill.

B. Pipe and pipe fitting materials are specified in piping system Sections.

#### 1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 03 30 00, Cast-In place concrete.
2. Section 07 84 13, Firestopping.
3. Section 07 92 00, Joint Sealants.
4. Section 23 05 48, Foundation and Seismic Controls for HVAC Piping and Equipment.
5. Section 23 05 00, Common Work Results for HVAC.
6. Section 31 00 00, Earthwork.
7. Division 23, Mechanical
8. Division 26, Electrical
9. Other Sections where applicable.

#### 1.3 QUALITY ASSURANCE

A. Qualify welding processes and operators for structural steel according to AWS D1.1 "Structural Welding Code--Steel."

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B. Qualify welding processes and operators for piping according to ASME "Boiler and Pressure Vessel Code," Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions of ASME B31 Series "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for the welding processes involved and that certification is current.

C. Products Criteria:

1. All equipment furnished as part of the work shall comply with the latest editions of all applicable state and municipal "energy codes." Provide certification from the equipment suppliers for all energy-consuming equipment that the equipment fully complies with these codes. Equipment submissions will not be accepted for review unless accompanied by such certification in writing.
2. All equipment and materials shall be new and without blemish or defect.
3. New equipment and materials shall be Underwriters Laboratories, Inc. (U.L.) labeled and/or listed where specifically called for, or where normally subject to such U.L. labeling and/or listing services.
4. All equipment and materials shall be free of asbestos.
5. Electrical equipment and materials shall be products which will meet with the acceptance of the agency inspecting the electrical work. Where such acceptance is contingent upon having the products examined, tested and certified by Underwriters or other recognized testing laboratory, the product shall be examined, tested and certified. Where no specific indication as to the type or quality of materials or equipment is indicated, a first class standard article shall be furnished.
6. It is the intent of these specifications that wherever a specific manufacturer of a product is specified or scheduled, and the specifications include other approved manufacturers or the terms "other approved" or "or approved equal" or "equal" are used, the submitted item must conform in all respects to the specified item. Consideration will not be given to claims that the submitted item meets the performance requirements with lesser construction (such as lesser heat exchange surface, smaller motor HP, etc.). Performance as delineated in schedules and in the specifications shall be interpreted as minimum performance. In many cases equipment is oversized to allow for pick-up loads which cannot be delineated under the minimum performance.
7. All equipment of one type (such as fans, pumps, coils, etc.), shall be the products of one Manufacturer.
8. Substituted equipment or optional equipment where permitted and approved, must conform to space requirements. Any substituted equipment that cannot meet space requirements, whether approved or not, shall be replaced at the Contractor's expense. Any modifications of related systems as a result of substitutions shall be made at the Contractor's expense.

9. Note that the approval of shop drawings, or other information submitted in accordance with the requirements hereinbefore specified, does not assure that the Engineer, Architect, or any other Owner's Representative, attests to the dimensional accuracy or dimensional suitability of the material or equipment involved or the ability of the material or equipment involved or the mechanical performance of equipment. Approval of Shop Drawings does not invalidate the plans and specifications if in conflict, unless a letter requesting such change is submitted and approved on the Engineer's letterhead.
  10. Substitutions of Mechanical Equipment for that shown on the schedules or designated by model number in the specifications will not be considered if the item is not a regular cataloged item shown in the current catalog of the manufacturer.
- D. **Manufacturer's Recommendations:** Where installation procedures of any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.
- 1.4 **DELIVERY, STORAGE, AND HANDLING**
- A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.
  - B. Deliver, store and handle all materials to keep clean and protected from damage.
  - C. Store products in shipping containers and maintain in place until installation.
  - D. Deliver pipes and tubes with factory-applied end-caps. Maintain end-caps through shipping, storage, and handling to prevent pipe-end damage and prevent entrance of dirt, debris, and moisture.
  - E. Protect stored pipes and tubes from moisture and dirt. Elevate above grade. When stored inside, do not exceed structural capacity of the floor.
  - F. Protect flanges, fittings, and piping specialties from moisture and dirt.
  - G. Protect stored plastic pipes from direct sunlight. Support to prevent sagging and bending.
  - H. Protect equipment and other materials from damage after installed from construction debris and other damage.
- 1.5 **PROTECTION AND CLEANING**
- A. It shall be this trade's responsibility to store his materials in a manner that will maintain an orderly clean appearance. If stored on-site in open or unprotected areas, all equipment and material shall be kept off the ground by means of pallets or racks, and covered with tarpaulins.



- B. Equipment and material if left in the open and damaged shall be replaced, repainted, or otherwise refurbished at the discretion of the Commissioner. Equipment and material is subject to rejection and replacement if in the opinion of the engineer, or in the opinion of the manufacturer's engineering department, the equipment has deteriorated or been damaged to the extent that its immediate use is questionable, or that its normal life expectancy has been curtailed.
- C. During the erection protect all ductwork, duct lining, insulation, piping, and equipment from damage and dirt. Cap the open top and bottom of all ductwork and piping installed.
- D. After completion of project, clean the exterior surface of all equipment included in this division of work including, but not limited to, concrete residue.

#### 1.6 FLUSHING AND CLEANING OF PIPING

- A. All piping systems shall be thoroughly flushed out with the approved cleaning chemicals to remove pipe dope, slushing compounds, cutting oils, and other loose extraneous materials. This also includes any piping systems which are not listed as requiring water treatment.
- B. Develop plan for flushing and cleaning piping. Submit plan for approval prior to completion of piping. Provide all temporary and permanent piping, equipment, materials necessary to complete flushing and cleaning.
- C. Prior to flushing, temporarily remove, isolate or bypass dirt sensitive equipment and devices, including the following:
  - 1. Automatic flow control valves
  - 2. Heating and cooling coils
  - 3. Chillers
  - 4. Boilers
  - 5. Heat exchangers
  - 6. Flow measuring devices
  - 7. Reinstall after flushing is complete.
- D. Prior to flushing, install fine mesh construction strainers at inlet to all equipment with connections 2-1/2" and larger. Install fine mesh construction element in permanent strainers. During flushing and cleaning, remove and clean strainers periodically. At completion of final flush, clean permanent strainers, remove construction strainers.
- E. Flush all piping with cold water for a minimum of 6 feet per second for one hour, until water runs clear. Water supply shall be equivalent to piping to be flushed. Drain all low points.

- F. Circulate flush water and clean strainers prior to installing cleaning chemicals. Provide cleaning chemicals, under the direction of the chemical supplier. Following flushing, install cleaning chemicals and circulate through the entire system for a minimum of one hour, or as directed by chemical supplier. Take water sample for Commissioner's use. Drain system, including all low points. Flush, drain and fill system, circulate for one hour, sample for Commissioner's use. Drain, flush, fill, circulate and sample until system is free of cleaning chemicals, as indicated by analysis of samples.
- G. Provide temporary pumps and piping to chemically clean piping at a minimum velocity of 6 fps without using the system pumps.
- H. The cleaning chemicals shall be added by the mechanical trade. The chemical supplier shall verify that the chemicals are compatible with all the materials in the systems. The chemical supplier shall instruct as to the proper feed rates, shall check that the cleaning solution is actually in each system, shall instruct the contractor as to when to flush the system and shall check each system following flushing to insure all cleaning chemicals have been removed from each system.
- I. A certificate of cleaning shall be provided by the cleaning chemical supplier to the Architect's representative.

#### 1.7 FIRE AND SMOKE DETECTION

- A. Fire and smoke detection system will be provided and installed by the Electrical trade. The HVAC trade will provide suitable openings (as recommended by the Smoke Detection System Manufacturer) in sheet metal for sensing elements.
- B. This Trade will provide access doors to make all such detection heads accessible.
- C. This trade will provide bracing for smoke detection sampling tubes which exceed 48" in length.

#### 1.8 SEQUENCING AND SCHEDULING

- A. Coordinate mechanical equipment installation with other building components.
- B. Arrange for chases, slots, and openings in building structure during progress of construction to allow for mechanical installations.
- C. Coordinate the installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- D. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Coordinate installation of large equipment requiring positioning prior to closing in the building.
- E. Coordinate connection of electrical services.
- F. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.

- G. Coordinate requirements for access panels and doors where mechanical items requiring access are concealed behind finished surfaces.
- H. Coordinate installation of identifying devices after completing covering and painting where devices are applied to surfaces. Install identifying devices prior to installing acoustical ceilings and similar concealment.

## PART 2 - PRODUCTS

### 2.1 CENTRAL CONTROL PANELS

- A. Provide panel for alarm and start-stop functions, as specified herein.
- B. See drawings for details.

### 2.2 ACCESS DOORS IN FINISHED CONSTRUCTION

- A. Access doors as required for operation and maintenance of concealed equipment, valves, controls, etc. will be provided by another trade.
- B. This Trade is responsible for access door location, size and its accessibility to the valves or equipment being served.
- C. Coordinate and prepare a location, size, and function schedule of access doors required and deliver to a representative of the installing Trade. Furnish and install distinctively colored buttons in finished ceiling.
- D. Access doors shall be of ample size, minimum of 18" x 18".
- E. Construct doors and frames to comply with the requirements of the NFPA and Underwriters Laboratories Inc. for fire rating. Install UL label on each door in a non-exposed location unless otherwise required by the local authority having jurisdiction.

### 2.3 DIELECTRIC FITTINGS

- A. For all systems, provide dielectric fittings to isolate joined dissimilar materials to prevent galvanic action and stop corrosion. Fittings shall be of the non reducing type, which shall be suitable for the system fluid, pressure, and temperature and shall not restrict the flow.
- B. For factory fabricated equipment, manufacturer shall submit method of compliance or exceptions (if applicable) in writing as part of the shop drawings submission for review by Engineer.
- C. It is the intent of this section that all system components (equipment connections, piping, etc.). Whether they are field installed or factory fabricated shall comply with paragraph A above.
- D. Dielectric Fittings: Assembly or fitting, non-reducing type, having insulating material isolating joined dissimilar metals to prevent galvanic action and stop corrosion.

- E. Description: Combination of copper alloy and ferrous; threaded, solder, plain, and weld neck end types and matching piping system materials.
- F. Insulating Material: Suitable for system fluid, pressure, and temperature, does not restrict flow.
- G. Dielectric Unions: Factory-fabricated, union assembly for 250-psig (1725kPa) minimum working pressure at a 180 deg F (82 deg C) temperature.
- H. Dielectric Flanges: Factory-fabricated, companion-flange assembly for 150- or 300-psig (1035kPa or 2070kPa) minimum pressure to suit system pressures.
- I. Dielectric-Flange Insulation Kits: Field-assembled, companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
- J. Dielectric Couplings: Galvanized-steel coupling, having inert and noncorrosive, thermoplastic lining, with threaded ends and 300-psig (2070kPa) minimum working pressure at 225 deg F (107 deg C) temperature.
- K. Dielectric Nipples: Electroplated steel nipple, having inert and noncorrosive thermoplastic lining, with combination of plain, threaded, or grooved end types and 300-psig (2070kPa) working pressure at 225 deg F (107 deg C) temperature.

#### 2.4 PIPE AND PIPE FITTINGS

- A. Also refer to individual piping system specification Sections for pipe and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

#### 2.5 JOINING MATERIALS

- A. Refer to individual piping system specification Sections in Division 23 for special joining materials not listed below.
- B. Pipe Flange Gasket Materials: Suitable for the chemical and thermal conditions of the piping system contents.
  - 1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch (3mm) maximum thickness, except where thickness or specific material is indicated.
  - 2. ASME B16.20 for grooved, ring-joint, steel flanges.
  - 3. AWWA C110, rubber, flat face, 1/8 inch (3 mm) thick, except where other thickness is indicated; and full-face or ring type, except where type is indicated.
- C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, except where other material is indicated.

- D. Plastic Pipe Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, except where other type or material is indicated.
- E. Solder Filler Metal: ASTM B 32.
- F. Fittings for copper tubing shall be Chase Sweat Fittings, Mueller Brass Co.'s "Streamline" solder fittings, or "Arco" wrought-copper fittings. "T"-Drill type fittings are not acceptable. All piping shall be installed in a workmanlike manner, according to the manufacturer's instruction. All joints shall be thoroughly cleaned before connecting. All solder for copper tubing shall have a melting point of not less than 460 degrees F., composed of 95% tin and 5% antimony, or brazing filler metal melting at or above 1000°F (silver or copper-phosphorus) in accordance with the following table. Regardless of pressures in table below, use 95-5 tin antimony for fresh water.

SAFE STRENGTH OF SOLDERED JOINTS					
Pressure Ratings					
Maximum Service Pressure, PSI					
Water					
Solder used in Joints	Service Temperatures Deg. F.	¼ to 1 inch Incl.	1 - ¼ to 2 inches Incl.	2 - ½ to 4 inches Incl.	6 inches
95-5 Tin-Antimony	100	500	400	300	260
	150	400	350	275	260
	200	300	250	200	250
	250	200	175	150	250
Brazing Filler Metal* at or above 1000°F	250	300	210	170	150
	350	270	190	155	150

\*For service temperatures 200° and below, the rated internal pressure is equal to that of tube being joined.

- G. Brazing Filler Metals: AWS A5.8.
  - 1. BCuP Series: Copper-phosphorus alloys.
  - 2. BAg1: Silver alloy.
- H. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- I. Solvent Cements: Manufacturer's standard solvents complying with the following:
  - 1. Acrylonitrile-Butadiene-Styrene (ABS): ASTM D 2235.
  - 2. Chlorinated Poly(Vinyl Chloride) (CPVC): ASTM F 493.
  - 3. Poly(Vinyl Chloride) (PVC): ASTM D 2564.

4. PVC to ABS Transition: Made to requirements of ASTM D 3138, color other than orange.
- J. Plastic Pipe Seals: ASTM F 477, elastomeric gasket.
- K. Flanged, Ductile-Iron Pipe Gasket, Bolts, and Nuts: AWWA C110, rubber gasket, carbon steel bolts and nuts.
- L. Couplings: Iron body sleeve assembly, fabricated to match outside diameters of plain-end pressure pipes.
  1. Sleeve: ASTM A 126, Class B, gray iron.
  2. Followers: ASTM A 47 (ASTM A 47M), Grade 32510 or ASTM A 536 ductile iron.
  3. Gaskets: Rubber.
  4. Bolts and Nuts: AWWA C111.
  5. Finish: Enamel paint.

## 2.6 PIPING SPECIALTIES

- A. Provide escutcheons on all exposed piping passing through walls, floors, partitions and ceilings, except provide close fitting metal escutcheons on both sides of piping (whether exposed or not) through required fire rated walls, floors, partitions & ceilings.
- B. Escutcheons: Manufactured wall, ceiling, and floor plates; deep-pattern type where required to conceal protruding fittings and sleeves.
  1. Inside Diameter: Closely fit around pipe, tube, and insulation.
  2. Outside Diameter: Completely cover opening.
  3. Cast Brass: One-piece, with set-screw.
- C. Mechanical Sleeve Seals: Modular, watertight mechanical type. Components include interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve. Connecting bolts and pressure plates cause rubber sealing elements to expand when tightened.
- D. Sleeves: The following materials are for all wall, floor, slab, and roof penetrations:

### E. Sleeve Materials

<u>Type Designation</u>	<u>Sleeve Material</u>
1	#18 gauge, galvanized steel.
2	Standard weight galvanized steel pipe.

Type Designation

Sleeve Material

3	Standard weight galvanized steel pipe with a continuously welded water stop of 1/4" steel plate extending from outside of sleeve a minimum of 2" all around - similar to F & S Mfg. Corp. Fig. 204.
4	Cast iron pipe sleeve with center flange - similar to James B. Clow & Sons No. F-1430 and F-1435.
5	Standard weight galvanized steel pipe with flashing clamp device welded to pipe sleeve or watertight sleeves - similar to Zurn 195-10 with oakum caulking as required.
6	Metal deck and wall sleeves similar to Adjust-To-Crete Mfg. Co.

F. Sleeve Sizes

1. Floors and required fire rated partitions - 1/2" maximum clearance between outside of pipe (or insulation on insulated pipes) and inside of sleeve.
2. Partitions not fire rated - 1-1/2" maximum clearance between outside of pipe (or insulation on insulated pipes) and inside of sleeve.

G. Sleeve Lengths

Location

Sleeve Length

Floors

Equal to depth of floor construction including finish. In waterproof floor construction sleeves to extend minimum of 2" above finished floor level.

Roofs

Equal to depth of roof construction including insulation.

Walls & Partitions

Equal to depth of construction and terminated flush with surfaces

H. Sleeve Caulking & Packing.

Type Designation

Caulking & Packing Requirements

A

Space between pipe and sleeve packed with oakum or hemp and caulked watertight.

Type Designation

Caulking & Packing Requirements

B

Space between pipe or pipe covering and sleeve shall be caulked with an incombustible, permanently plastic, waterproof non-staining compound leaving a finished smooth appearance or pack with mineral wool or other equally approved fire resistive material to within ½" of both wall faces and provide caulking compound as per above.

2.7 IDENTIFYING DEVICES AND LABELS

- A. General: Manufacturer's standard products of categories and types required for each application as referenced in other Division 23 Sections. Where more than one type is specified for listed application, selection is Installer's option, but provide single selection for each product category.
- B. Equipment Nameplates: Metal nameplate with operational data engraved or stamped, permanently fastened to equipment.
  - 1. Data: Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data.
  - 2. Location: An accessible and visible location.
- C. Stencils: Standard stencils, prepared for required applications with letter sizes conforming to recommendations of ASME A13.1 for piping and similar applications, but not less than 1-1/4-inch (30mm) -high letters for ductwork and not less than 3/4-inch (19mm) -high letters for access door signs and similar operational instructions.
  - 1. Material: Fiberboard.
  - 2. Stencil Paint: Standard exterior type stenciling enamel; black, except as otherwise indicated; either brushing grade or pressurized spray-can form and grade.
  - 3. Identification Paint: Standard identification enamel of colors indicated or, if not otherwise indicated for piping systems, comply with ASME A13.1 for colors.
- D. Pressure-Sensitive Pipe Markers: Manufacturer's standard preprinted, permanent adhesive, color-coded, pressure-sensitive vinyl pipe markers, conforming to ASME A13.1.
- E. Plastic Duct Markers: Manufacturer's standard laminated plastic, color coded duct markers. Conform to following color code:
  - 1. Green: Cold air.



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2. Yellow: Hot air.
  3. Yellow/Green: Supply air.
  4. Blue: Exhaust, outside, return, and mixed air.
  5. For hazardous exhausts, use colors and designs recommended by ASME A13.1.
  6. Nomenclature: Include following:
- F. Engraved Plastic-Laminate Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white (letter color) melamine subcore, except when other colors are indicated.
1. Fabricate in sizes required for message.
  2. Engraved with engraver's standard letter style, of sizes and with wording to match equipment identification.
  3. Punch for mechanical fastening.
  4. Thickness: 1/8 inch (3 mm), except as otherwise indicated.
  5. Fasteners: Self-tapping stainless-steel screws or contact-type permanent adhesive.
- G. Plastic Equipment Markers: Laminated-plastic, color-coded equipment markers. Conform to following color code:
1. Green: Cooling equipment and components.
  2. Yellow: Heating equipment and components.
  3. Yellow/Green: Combination cooling and heating equipment and components.
  4. Brown: Energy reclamation equipment and components.
  5. Blue: Equipment and components that do not meet any of the above criteria.
  6. For hazardous equipment, use colors and designs recommended by ASME A13.1.
  7. Nomenclature: Include following, matching terminology on schedules as closely as possible:
  8. Lettering Size: Minimum 1/4-inch (6mm) -high lettering for name of unit where viewing distance is less than 2 feet (0.6 m), 1/2-inch (13mm) -high for distances up to 6 feet (1.8 m), and proportionately larger lettering for greater distances. Provide secondary lettering 2/3 to 3/4 of size of principal lettering.
  9. Text of Signs: Provide text to distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to name of identified unit.

10. Size: Approximately 2-1/2 by 4 inches (65 by 100 mm) for control devices, dampers, and valves; and 4-1/2 by 6 inches (115 by 150 mm) for equipment.

H. Valves

1. Attach a 2" round brass tag stamped with designating numbers 1" high filled in with black enamel to each valve, except those on fixtures.
2. Securely fasten valve tag to valve spindle or handle with a brass chain.
3. Provide approved ceiling tile markers in areas where removable ceilings occur to indicate location of valves or other devices.

I. Motor Control Identification

1. Mount black lamacoid nameplates on each motor controller identifying primary control function and individual position indication such as Pump No. 1, etc. Nameplates shall be cut through to white background and have beveled edges. Mount with chromium plated acorn head screws.

J. Schedules and Charts

1. Furnish to Commissioner three (3) complete framed plastic laminated valve tag schedules. Schedule shall indicate tag number, valve location by floor and nearest column number, valve size and service controlled.

K. Lettering and Graphics: Coordinate names, abbreviations, and other designations used in mechanical identification, with corresponding designations indicated. Use numbers, lettering, and wording indicated for proper identification and operation/maintenance of mechanical systems and equipment.

1. Multiple Systems: Where multiple systems of same generic name are indicated, provide identification that indicates individual system number as well as service such as "Boiler No. 3," "Air Supply No. 1H," or "Standpipe F12."

2.8 GROUT

A. Nonshrink, Nonmetallic Grout: ASTM C 1107, Grade B.

1. Characteristics: Post-hardening, volume-adjusting, dry, hydraulic-cement grout, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi (34.50MPa), 28-day compressive strength.
3. Packaging: Premixed and factory-packaged.

## 2.9 DRIVE GUARDS

- A. For all machinery and equipment (whether factory fabricated or field installed) provide OSHA approved guards for belts, chains, couplings, pulleys, sheaves, shafts, gears and other moving parts regardless of height above the floor.
- B. Materials: Sheet steel, cast iron, expanded metal or heavy gauge wire mesh rigidly secured so as to be removable without disassembling pipe, duct, or electrical connections to equipment.
- C. Access for Speed Measurement: One inch diameter hole at each shaft center.

## 2.10 FIRE-STOPPING

- A. Refer to Section, Firestopping.
- B. HVAC trade is responsible for firestopping of HVAC work.
- C. Firestopping system must be U.L. approved.
- D. All spaces between ducts or pipes and their respective sleeves shall be packed full depth with mineral wool, or other equally approved fire resistant material, and compressed firmly in place. Fiberglass shall not be used. Sleeve clearances shall not exceed ½ inch between pipes (or ducts) and sleeves. Use individual sleeves for each pipe or duct. Use escutcheons on both sides of sleeves. This includes spaces between ducts on pipes and their respective sleeves or openings at fan rooms (whether walls are fire rated or not).

## 2.11 TOOLS AND LUBRICANTS

- A. Furnish special tools not readily available commercially, that are required for disassembly or adjustment of equipment and machinery furnished.
- B. Lubricants: A minimum of one quart of oil, and one pound of grease, of equipment manufacturer's recommended grade and type, in unopened containers and properly identified as to use for each different application.

## 2.12 AUTOMATIC CONTROL VALVES - GENERAL

- A. All automatic control valves controlled by the central control system (ATC/BMS) shall be furnished by the controls contractor unless noted otherwise in these documents.
- B. All automatic control valves shall be installed by the mechanical trade.
- C. The controls contractor shall provide wiring as follows:
  - 1. All line voltage power for electric valve actuators shall be wired by the controls contractor from the nearest available power panel. Coordinate with electrical trade.
  - 2. All wiring between the central control system (BMS) and the valve actuator shall be wired by the controls contractor.

3. All wiring between the valve actuator and their associated thermostats, pressure switches, control devices, etc. shall be wired by the controls contractor.
- D. All wiring shall comply with code requirements. Segregate high and low voltage wiring & circuits and segregate the FAS and controls (ATC/BMS) terminals.

### PART 3 - EXECUTION

#### 3.1 PIPING SYSTEMS--COMMON REQUIREMENTS

- A. Install piping as described herein, except where system Sections specify otherwise. Individual piping system specification Sections in Division 23 specify piping installation requirements unique to the piping system.
- B. All piping materials shall be compatible for temperature, pressure and service.
- C. All piping materials of a given type shall be manufactured by a single source, and supplied by a single supplier.
- D. Install piping as described herein, except where system Sections specify otherwise. Individual piping system specification Sections in Division 23 specify piping installation requirements unique to the piping system.
- E. General Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, except where deviations to layout are reviewed on coordination drawings.
- F. Coordinate location of piping, sleeves, inserts, hangers, ductwork and equipment. Locate piping, sleeves, inserts, hangers, ductwork and equipment clear of windows, doors, openings, light outlets, and other services and utilities. Follow manufacturer's published recommendations for installation methods not otherwise specified.
- G. All steam and condensate system piping and all medium/high temperature hot water systems above 160 psi and 250°F shall comply with ANSI Standard B31.1 - Power Piping, except as noted herein.
- H. All building service piping (including pressurized piping, condensate vacuum), shall comply with ANSI Standard B31.9 - Building Service Piping, unless noted otherwise.
- I. All economizers, heaters, boilers, tanks, heat exchangers shall also comply with the ASME Boiler and Pressure Vessel (BPV) Code.
- J. Piping specifications shall be submitted with shop drawings.

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- K. Install gages, thermometers, valves and other devices with due regard for ease in reading or operating and maintaining said devices. Locate and position thermometers and gages to be easily read by operator or staff standing on floor or walkway provided. Servicing shall not require dismantling adjacent equipment or pipe work.
- L. Furnish and install all necessary float devices, aquastats, thermostats, pressure sensors, etc. required for alarm indication as indicated on the HVAC Motor Controls Specifications sheet.
- M. Minimum pipe size shall be 3/4".
- N. Install piping at required slope.
- O. Install components having pressure rating equal to or greater than system operating pressure.
- P. Install piping in concealed interior and exterior locations, except in equipment rooms and service areas.
- Q. Install piping free of sags and bends.
- R. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, except where indicated.
- S. Install piping tight to slabs, beams, joists, columns, walls, and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.
- T. Install piping to allow application of insulation plus 1-inch (25mm) clearance around insulation.
- U. Locate groups of pipes parallel to each other, spaced to permit valve servicing.
- V. Install fittings for changes in direction and branch connections.
- W. Install couplings according to manufacturer's printed instructions.
- X. Install pipe escutcheons for pipe penetrations of concrete and masonry walls, wall board partitions, and suspended ceilings according to the following:
  - 1. Chrome-Plated Piping: Cast-brass, one-piece, with set-screw, and polished chrome-plated finish. Use split-casting escutcheons, where required, for existing piping.
  - 2. Uninsulated Piping Wall Escutcheons: Cast-brass or stamped-steel, with set-screw.
  - 3. Uninsulated Piping Floor Plates in Utility Areas: Cast-iron floor plates.
  - 4. Insulated Piping: Cast-brass or stamped-steel, with concealed hinge, spring clips, and chrome-plated finish.
  - 5. Piping in Utility Areas: Cast-brass or stamped-steel, with set-screw or spring clips.

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Y. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, concrete floor and roof slabs, and where indicated.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Build sleeves into new walls and slabs as work progresses.

Z. Sleeve Application

Sleeve Type Through Required Fire Rated Construction	Sleeve Type Through Non-Fire Rated Construction	Location	Sleeve Flashing & Packing Type Designation
5	5	Membrane waterproof floor, roof and wall construction	B  Note: Another trade will carry membrane up around sleeve and down inside sleeve
5	5	Non membrane waterproof floor, roof and wall construction where flashing is required	A or B
2	1, 2	Interior walls, partitions and floors	B
3 or 4	3 or 4	Exterior walls	A
2	6	Metal deck floors	B
1	1	Precast concrete floor with poured concrete topping. Note: Sleeves to have flat flanges and/or guides which rest on top of pre-cast slab	B

AA. Fire Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestopping sealant material. Firestopping materials are specified in Division 7 Section "Firestopping."

BB. Verify final equipment locations for roughing in.

CC. Refer to equipment specifications in other Sections for roughing-in requirements.

DD. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping system Sections.

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1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
  2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
  3. Soldered Joints: Construct joints according to AWS "Soldering Manual," Chapter 22 "The Soldering of Pipe and Tube."
  4. Brazed Joints: Construct joints according to AWS "Brazing Manual" in the "Pipe and Tube" chapter.
  5. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full inside diameter. Join pipe fittings and valves as follows:
  6. Welded Joints: Construct joints according to AWS D10.12 "Recommended Practices and Procedures for Welding Low Carbon Steel Pipe" using qualified processes and welding operators according to the "Quality Assurance" Article.
  7. Flanged Joints: Align flange surfaces parallel. Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly using torque wrench.
  8. Plastic Pipe and Fitting Solvent-Cement Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join pipe and fittings according to the following standards:
  9. Plastic Pipe and Fitting Heat-Fusion Joints: Prepare pipe and fittings and join with heat-fusion equipment according to manufacturer's printed instructions.
- EE. Piping Connections: Except as otherwise indicated, make piping connections as specified below.
1. Install unions in piping 2 inches (50 mm) and smaller adjacent to each valve and at final connection to each piece of equipment having a 2-inch (50mm) or smaller threaded pipe connection.
  2. Install flanges in piping 2-1/2 inches (65 mm) and larger adjacent to flanged valves and at final connection to each piece of equipment having flanged pipe connection.
  3. Wet Piping Systems (Water and Steam): Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

FF. All welding elbows shall be long radius elbows ANSI B16.9

GG. Where welding is used, fittings shall be Tube Turn, Bonney Forge, Taylor Forge, Ladish, or other approved manufacture, ANSI B-16.9. Welding end fittings shall have the same bursting pressure as pipe of the same size and schedule. Tee fittings shall be one piece except that weldolets are permitted where branches are at least one pipe size less than the main.

HH. All cast iron fittings shall be Stockham, Grinnell, or other approved.

### 3.2 PRESSURE TESTING - ALL PIPING SYSTEMS

A. Water shall not be introduced into piping systems for testing without water treatment. All piping systems shall be tested to a hydrostatic pressure at least 1-1/2 times the maximum operating pressure (but not less than 125 psig) for a sufficiently long time, but not less than 4 hours, to detect all leaks and defects. Where necessary, piping shall be tested in sections to permit the progress of the job.

B. Hydrostatic Testing Corrosion Inhibitor

1. If sections of system must be hydrostatically tested prior to cleanout, appropriate inhibitor shall be added to the test water at sufficient level to totally passivate metal and provide protective film on pipe surfaces to prevent corrosion prior to cleanout and treatment.
2. Mechanical Contractor shall be responsible to coordinate this treatment with the water treatment contractor. At no time shall the Mechanical Contractor add water to a system without treatment.

### 3.3 EQUIPMENT INSTALLATION--COMMON REQUIREMENTS

- A. Install equipment to provide the maximum possible headroom where mounting heights are not indicated.
- B. Install equipment according to approved submittal data. Portions of the Work are shown only in diagrammatic form. Refer conflicts to the Commissioner.
- C. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, except where otherwise indicated.
- D. Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. Connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.
- E. Install equipment giving right-of-way to piping systems installed at a required slope.

### 3.4 LABELING AND IDENTIFYING

- A. Piping Systems: Install pipe markers on each system. Include arrows showing normal direction of flow.
  1. Stenciled Markers: Complying with ASME A13.1.



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2. Plastic markers, with application systems. Install on pipe insulation segment where required for hot noninsulated pipes.
  3. On exposed piping apply bands on 30 foot centers of straight runs, at valve locations, at points where piping enters and leaves a partition, wall, floor or ceiling.
  4. On concealed piping installed above removable ceiling construction apply bands in manner described for exposed piping.
  5. On concealed piping installed above non-removable ceiling construction, or in pipe shafts, apply bands at valve or other devices that are made accessible by means of access doors or panels.
  6. Apply bands at exit and entrance points to each vessel, tank or piece of equipment.
  7. Band widths shall be 8" for pipes up to 10 inch diameter and 16" wide for larger diameter piping. Letter heights stating service shall be preprinted on band 3/4" high for 8 inch bands and 1-1/2" high for 16 inch bands.
  8. For insulated pipes apply bands after insulation and painting work has been completed.
  9. Colors shall conform to ASME Standard A13.1. Provide 24 additional bands of each type for future use by Commissioner.
  10. Follow manufacturer's instructions for application procedures using non-combustible materials and contact adhesives.
- B. Equipment: Install engraved plastic laminate sign or equipment marker on or near each major item of mechanical equipment.
1. Lettering Size: Minimum 1/4-inch (6mm) -high lettering for name of unit where viewing distance is less than 2 feet (0.6 m), 1/2-inch (13mm) -high for distances up to 6 feet (1.8 m), and proportionately larger lettering for greater distances. Provide secondary lettering 2/3 to 3/4 of size of principal lettering.
  2. Text of Signs: Provide text to distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to name of identified unit.
- C. Duct Systems: Identify air supply, return, exhaust, intake, and relief ducts with duct markers; or provide stenciled signs and arrows, showing duct system service and direction of flow.
1. Location: In each space where ducts are exposed or concealed by removable ceiling system, locate signs near points where ducts enter into space and at maximum intervals of 50 feet (15 m).
- D. Adjusting: Relocate identifying devices which become visually blocked by work of this Division or other Divisions.

E. Valves

1. Attach a 2" round brass tag stamped with designating numbers 1" high filled in with black enamel to each valve, except those on fixtures.
2. Securely fasten valve tag to valve spindle or handle with a brass chain.
3. Provide approved ceiling tile markers in areas where removable ceilings occur to indicate location of valves or other devices.

F. Motor Control Identification

1. Mount black lamacoid nameplates on each motor controller identifying primary control function and individual position indication such as Pump No. 1, etc. Nameplates shall be cut through to white background and have beveled edges. Mount with chromium plated acorn head screws.

G. Schedules and Charts

1. Furnish to Commissioner three (3) complete framed plastic laminated valve tag schedules. Schedule shall indicate tag number, valve location by floor and nearest column number, valve size and service controlled.

3.5 PAINTING AND FINISHING

- A. Damage and Touch Up: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.6 PANS AND DRAINS OVER ELECTRICAL EQUIPMENT:

- A. This contractor shall examine the drawings and in cooperation with the Electrical Trade confirm the final location of all electrical equipment to be installed in the vicinity of piping. Plan and arrange all overhead piping no closer than 6'-0" feet from a vertical line above electrical equipment, including but not limited to, elevator machine room equipment, main switchgear equipment, motor control centers, starter, electric motors, switchboards, panelboards, or similar equipment. Piping is not permitted in Electric Equipment, Transformer, Switch Gear, Elevator Equipment, Telephone Gear and Fire Pump Rooms.
- B. Where the installation of piping does not comply with the requirements of the foregoing paragraph, where feasible the piping shall be relocated.
- C. Furnish gutters as follows:
1. Provide and erect a gutter of 16 ounce cold rolled copper or 18 gauge galvanized steel, under every pipe which is within 6'-0" from a vertical line to any motor, electrical controllers, switchboards, panelboards, or the like.
  2. Each gutter shall be reinforced, rimmed, soldered and made watertight, properly suspended and carefully pitched to a convenient point for draining. Provide a 3/4" drain, with valve as directed, to nearest floor drain or slop sink, as approved.

3. In lieu of such separate gutters, a continuous protecting drain pan of similar construction adequately supported and braced, properly rimmed, pitched and drained to a floor drain or suitable waste, may be provided over any such electrical equipment, and extending 3'-0" in all directions beyond the electrical equipment, over which such piping has to run.

### 3.7 CONCRETE BASES

- A. Construct concrete equipment bases of dimensions indicated, but not less than 4 inches (100 mm) larger than supported unit in both directions. Follow supported equipment manufacturer's setting templates for anchor bolt and tie locations. Refer to concrete strength and reinforcement as specified in Division 3 Section "Cast-in-Place Concrete."

### 3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGE

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.
- B. Field Welding: Comply with AWS D1.1 "Structural Welding Code--Steel."

### 3.9 GROUTING

- A. Install nonmetallic nonshrink grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors. Mix grout according to manufacturer's printed instructions.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms for placement of grout, as required.
- D. Avoid air entrapment when placing grout.
- E. Place grout to completely fill equipment bases.
- F. Place grout on concrete bases to provide a smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout according to manufacturer's printed instructions.

### 3.10 WELDING PROCEDURE

- A. Pipe welding shall comply with the provisions of the latest revision of ANSI/ASME B31.9 Building Services Piping, or such state or local requirements as may supersede codes mentioned above.
- B. Pipe welding for MPS/HPS (15 psig and above) shall be in accordance with ASME B31.1 Power Piping Code, or such state or local requirements as may supersede codes mentioned above.

- C. Before any new pipe welding is performed, submit a copy of welding Procedure Specifications together with proof of its qualification as outlined and required by the most recent issue of the code having jurisdiction.
- D. Before any operator shall perform any pipe welding, submit the operator's Qualification Record in conformance with provisions of the code having jurisdiction, showing that the operator was tested under the proven Procedure Specification submitted.
- E. Repair or replace any work not in accordance with these specifications.

### 3.11 EXCAVATION AND BACKFILL

- A. All excavation and backfill for HVAC work will be done by the HVAC Trade.
- B. The work includes removal of surface improvements, excavating including hand excavation, sheeting, shoring, bracing, maintaining and protecting existing structures, utilities, pavements, shrubbery; dewatering by pumping of all water from excavation, bedding, backfilling, and compacting, restoration of surface improvements and cleaning up of the site.
- C. Instructions:
  - 1. Trenches shall be excavated so that pipe can be laid to the alignment and depth indicated on the drawings, and shall be excavated only so far in advance of pipe laying as approved.
  - 2. Width of trenches shall be held to a minimum consistent with the type of material encountered and the size of piping being laid, but the width at the top of the pipe shall not be more than 2 feet plus outside diameter of pipe. Excavation for manholes and other accessories shall have 12 inch minimum and a 24 inch maximum clearance on all sides.
  - 3. Before fill or backfilling commences, all trash, debris, and other foreign material shall be removed from trenches to be backfilled by this Trade. Fill material shall be free from timber, rocks 3" or larger, organic material, frozen material, and other unsuitable material as determined by the Architect. Filling shall not be done in freezing weather, unless specifically approved. No filling shall be done when material already in place is frozen.
  - 4. In filling around pipe, deposit backfill material in successive horizontal layers not exceeding 6" in thickness before compaction. Compact each layer thoroughly by means of approved mechanical tampers. Tech special care to obtain compaction under pipe haunches. Deposit backfill adjacent to pipes on both sides to approximately same elevation at the same time. Continue this method of filling and compacting until backfill is at least 18" above top of pipe.
  - 5. Backfilling for the remainder of pipe trenches to subgrades of paved or landscaped areas shall be done by mechanical tamping and rolling equipment, except that the use of such equipment is prohibited when said use may result in damage to pipelines or structures.

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6. All copper tubing laid in ground shall be backfilled around and one (1) foot over with good clean earth, free from stone or cinders, carefully tamped under and around the tubing for its full length. The remainder of the backfill shall be free from stones larger than (3) inches in diameter and shall be satisfactorily compacted by puddling and tamping.
7. Backfill shall be moistened as necessary for proper compaction. Water settling of fill will not be permitted.
8. Complete backfilling of pipe trenches as soon as possible after the pipe is laid and tested.
9. Existing pavements, roadways, walkways, curbs and landscaped areas disturbed during the progress of the excavation and backfill work shall be restored to their original condition at no additional cost to the City of New York.
10. Backfill shall be compacted to a minimum of 90% of modified AASHO maximum density as defined by ASTM D-1557. Any layer of fill, or portion thereof, which is not compacted to the required density shall be recompact until the specified density is achieved, or the layer shall be removed.

END OF SECTION 23 05 50

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SECTION 23 05 93 - TESTING, BALANCING AND ADJUSTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Testing, adjusting, and balancing of Hydronic and Steam Systems.
- B. Measurement of final operating conditions of HVAC Systems.
- C. Sound measurement of equipment operating conditions.
- D. Vibration measurement of equipment operating conditions.

1.2 SCOPE OF WORK:

A. General:

1. Testing, adjust and confirm design airflows rates, pressure drops, pressures, temperatures and heat transfer performance for HVAC systems, including, but not limited to chilled water system, condenser water system, steam and condensate system, hot water heating system; supply air, return air and exhaust air systems, including all associated pumps, heat exchangers, coils, fans, dampers, diffusers, terminal devices, fume hoods, valves and accessories, cooling towers, boilers, chillers, etc.
2. Provide all necessary labor, materials, products, equipment and services to balance and test all HVAC systems, to verify conformance to specified quantities, and to the design intent of the mechanical system and for the testing of all the fire safety systems.
3. Cooperate with all other trades, including, but not limited to, building controls, fire alarm, sheetmetal and piping sub-contractors to ensure the Work is carried out without interference to other Work.
4. Provide openings required for pitot tube traverses. After balancing, close openings with removable gasketed plugs. Submit samples of proposed plugs for approval.
5. Conduct routine inspections during the mechanical systems installation and report on poor ductwork installation (likely to produce abnormal leakage), poor piping installation, poor placement of dampers or valves, and any circumstance which will encumber the balancing of the mechanical systems.
6. Review Drawings and Specifications and ensure that adequate provisions are made in the mechanical installation to facilitate the balancing of all air, steam and water systems; make recommendations to the Architect/Engineer where additional measures may be required.

7. Include all items of labor, materials, products, equipment and devices required to comply with such standards and codes in accordance with the contract documents to balance all air and hydronic systems, to verify conformance to specified quantities and to the design intent of the mechanical system. Where quantities, sizes or other requirements indicated on the drawings or herein specified are in excess of the standard or code requirements, the specifications and drawings shall govern.

### 1.3 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section
- B. This section is a part of each Division 23 Section making reference to Testing, Balancing and Adjusting and the other sections of Division 23.

### 1.4 REFERENCES:

- A. ASHRAE - Standard 111 - 1988 Practices for Measurement, Testing, Adjusting, and Balancing of Building Heating, Ventilation, Air Conditioning, and Refrigeration Systems.
- B. ASHRAE - 1997 HVAC Systems and Applications Handbook: Chapter 57, Testing, Adjusting and Balancing.
- C. AABC- National Standards for Total System Balance.
- D. NEBB - Procedural Standards for Testing, Balancing and Adjusting of Environmental System.
- E. SMACNA - HVAC System Testing, Adjusting and Balancing.
- F. Sheet Metal Industry - Certification of Testing, Adjusting and Balancing Technicians.

### 1.5 DEFINITIONS

- A. Systems testing, adjusting, and balancing is the process of checking and adjusting all the building environmental systems to produce the design objectives. It includes:
  1. the balance of air, steam and hydronic distribution;
  2. adjustment of total system to provide design quantities;
  3. verification of performance of all equipment and automatic controls;
  4. sound and vibration measurement.
- B. Test: To determine quantitative performance of equipment.
- C. Adjust: To regulate the specified fluid flow rate and air patterns at the terminal equipment (e.g., reduce fan speed, throttling).



- D. Balance: To proportion flows within the distribution system (submains, branches, and terminals) according to specified design quantities.
- E. Procedure: Standardized approach and execution of sequence of work operations to yield reproducible results.
- F. Report forms: Test data sheets arranged for collecting test data in logical order for submission and review. These data should also form the permanent record to be used as the basis for required future testing, adjusting, and balancing.
- G. Terminal: The point where the controlled fluid enters or leaves the distribution system. These are supply inlets on water terminals, supply outlets on air terminals, return outlets on water terminals, and exhaust or return inlets on air terminals such as registers, grilles, diffusers, louvers, and hoods.
- H. Main: Duct or pipe containing the system's major or entire fluid flow.
- I. Submain: Duct or pipe containing part of the systems' capacity and serving two or more branch mains.
- J. Branch main: Duct or pipe serving two or more terminals.
- K. Branch: Duct or pipe serving a single terminal.

#### 1.6 SUBMITTALS:

- A. Procedures: Furnish submittals in accordance with the general requirements of the Contract Documents.
- B. Bid Submittals: Submit with bid, proposed balancing procedure on a system by system basis.
- C. Activity Programs: The Air and Water Balance contractor shall prepare and submit for approval a detailed activity program. The program shall be in accordance with the overall Construction Schedule.
  - 1. Specific requirements included within the activity program shall be:
    - a. Required dates for the acceptance of system/equipment from the installing contractor "ready for balance".
    - b. Required Periods for the individual system balancing.
    - c. Requirements for attendance from the installing contractor and their suppliers.
  - 2. Activity Programs shall be prepared for each major system and/or specific item of equipment.
  - 3. Activity Programs shall include, but shall not be limited to the following:
    - a. Heating Water Piping System including:

- (i) Pumps
- (ii) Boilers and/or heat exchangers

- D. Progress Reports: Submit progress reports on a system by system basis, including preliminary recommendations; allow for one such progress report, per system, prior to issue of final report. Progress report shall be issued upon notification by the Architect/Engineer shall be turned around within 10 working days.
- E. Certified Test Reports: Furnish test results and a schematic layout for each system, certified by the Contractor. Six completed copies including schematic layouts, shall be submitted to the Commissioner. Balancing report submitted shall list each VAV/ CV box, grille, register and diffuser associated with each system, giving numerical identification (including room number or area name), design quantity, final quantity, etc., and design power requirements for all supply and exhaust fans and actual operating conditions listing RPM, volts, amps, kw, etc., in accordance with AABC/NEBB test report forms. Include identification and types of instruments used and their most recent calibration date with test reports.

1. General

- a. Provide a complete balancing report in 3-ring binder manuals. Report should include contents, page and index tabs and cover identification at front and side.
- b. Include types, serial number and dates of calibration of test instruments. (Submit calibration certificates).
- c. Record test data on a sepia made from the latest available revised set of mechanical drawings and submit six (6) copies upon completion of the balancing contract.
- d. Install at each piece of mechanical equipment a "Data Register" showing significant operating temperatures, pressures, amperes, voltage frequency, motor KW, FLA, belt size/model number and sheave size. "Data Register" to be enclosed in a plastic holder securely attached to the equipment or to a wall in the adjacent area.
- e. Submit with report, fan and pump curves with operating conditions plotted. Submit grille and diffuser shop drawings and diffusion factors.
- f. Submit with the report schematics of all the air and water systems. The schematics should include the following:

2. Pumps

- a. Installation Data:
- b. Design Data:
- c. Recorded Data:

3. Expansion Tank Data:

- a. Manufacturer, size, capacity and type
- b. Pressure reducing valve setting
- c. Pressure relief valve setting
- d. Expansion tank pressure reading

4. PRV Stations
  - a. Equipment Design Data:
    - (i) Entering and leaving steam pressures
  - b. Equipment Recoded Data:
    - (i) Element type and identification (location and designation)
    - (ii) Entering steam pressure
    - (iii) Steam pressure drop across control valves
5. Notice: Furnish written notification to the Commissioner 5 days prior to commencement of the work.

#### 1.7 QUALITY ASSURANCE

##### A. Testing and Balancing Agency Qualifications:

1. Employ the services of an independent testing, adjusting, and balancing agency meeting the qualifications specified below, to be the single source of responsibility to test, adjust, and balance the building mechanical systems identified above, to produce the design objectives. Services shall include checking installations for conformity to design, measurement and establishment of the fluid quantities of the mechanical systems as required to meet design specifications, and recording and reporting the results.
2. The independent testing, adjusting, and balancing agency shall be certified by the National Environmental Balancing Bureau (NEBB) or Associated Air Balance Council (AABC) in those testing and balancing disciplines required for this project, and having at least one Professional Engineer registered in the State in which the services are to be performed, certified by NEBB or AABC as a Test and Balance Engineer.
3. The air and water balance agency shall provide proof of having at least 3 years testing, adjusting and balancing experience, as well as having successfully completed at least five projects of similar size and scope.
4. The work must be performed by a Certified Testing, Adjusting and Balancing Technician who may be assisted by other TAB Technicians. The Certified Testing, Adjusting and Balancing Technician is responsible for:
  - a. Procedures to be followed
  - b. Accuracy of all testing
  - c. Integrity of recorded data
  - d. Entering all data and reporting any abnormal or notable conditions on the report forms
  - e. Initialing and dating each sheet
5. The General Section of the Balance Report shall include the names, signatures, and registration numbers of the Technicians who were assigned to the project.

6. Codes and Standards:
  - a. NEBB: "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems."
  - b. AABC: "National Standards For Total System Balance".
  - c. ASHRAE: ASHRAE Handbook, 1984 Systems Volume, Chapter 37, Testing, Adjusting, and Balancing.
7. Contractor's Quality Assurance Responsibilities: This Contractor is solely responsible for quality control of the Work. Comply with the general requirements of the contract.

#### 1.8 HVAC CONTRACTOR RESPONSIBILITIES

- A. Prepare each system for testing and balancing
- B. Cooperate with the testing agencies; provide access to all work, equipment and systems.
- C. Put all heating, ventilating and air conditioning systems and equipment into full operation and shall continue the operation of same during each working day of testing and balancing. Operate systems and under conditions required for proper testing, adjusting, and balancing.
- D. Notify Testing Agency's project manager, Commissioner and Engineer seven days prior to time system will be ready for testing, adjusting, and balancing. Project readiness shall include:
  1. Systems are started and running (fans and pumps have been checked for proper rotation).
  2. Permanent electrical power wiring is complete.
  3. Verification that all ductwork is fabricated and installed as specified.
  4. Ceilings are installed in critical areas where air pattern adjustment may be required. Access to balancing devices are provided.
  5. All equipment and ductwork access doors are securely closed.
  6. All balancing, smoke and fire/smoke dampers are installed and in full open positions.
  7. All isolation and balancing valves are open and control valves are operational.
  8. System installation is complete, with Controls and Instrumentation installed and fully operational.
- E. The Testing Agency will provide the necessary input in the form of recommendation, and engineering drawings to facilitate testing construction.

#### 1.9 SEQUENCING AND SCHEDULING

- A. Sequencing work to commence after completion of systems and schedule completion of work before Substantial Completion of Project.

#### 1.10 DRAWING AND CONSTRUCTION REVIEW

- A. Perform a preconstruction review of the following documents:
  - 1. Updated construction drawings
  - 2. Contract specifications
  - 3. Addenda
  - 4. Submittal data
  - 5. Shop drawings
  - 6. Automatic Control drawings
- B. Prepare a report of the preconstruction review list of recommended changes to allow most effective balancing.
- C. Perform four construction reviews of the mechanical installation during the progress of the project. Purpose of the reviews to be:
  - 1. Identify potential problems for performing balancing.
  - 2. Identify modifications which will aid balancing.
  - 3. Schedule and coordinate balancing with other work and other trades.
- D. Prepare a report of each construction review.
- E. Pre-Balancing Conference: Prior to beginning of the testing, adjusting, and balancing procedures, schedule and conduct a conference with the Architect/Engineer and representatives of installers of the mechanical systems. The objective of the conference is final coordination and verification of system operation and readiness for testing, adjusting, and balancing.

#### 1.11 PROJECT/SITE CONDITIONS:

- A. General: Do not proceed until systems requiring testing, adjusting and balancing are clean and free from debris, dirt, and discarded building materials.
- B. Air balance and testing shall not begin until system has been completed and is in full working order. The mechanical contractor shall put all heating, ventilating and air conditioning systems and equipment into full operation and shall continue the operation of same during each working day of testing and balancing.

## PART 2 - PRODUCTS

### 2.1 EQUIPMENT:

- A. Provide all necessary testing, retesting, and balancing equipment including but not limited to instruments, gauges, blowers, tools, scaffolding, ladders, etc.
- B. Provide all necessary instruments. Instruments shall be used and applied which are best suited to the system function being tested. Instruments shall be in first class state of repair and have been calibrated within a period of six months prior to starting the job. Calibration history of each instrument shall be available for examination. Instruments shall be recalibrated upon completion of the job if required by the Design Engineer to prove reliability

### 2.2 SOURCE QUALITY CONTROL:

- A. Test, calibrate, retest and recalibrate measuring instruments at the laboratory.

## PART 3 - EXECUTION

### 3.1 EXAMINATION:

- A. Before commencing work, verify that systems are complete and operable. Ensure the following:
  - 1. Equipment is operable and in safe and normal condition.
  - 2. Temperature control systems are installed complete and operable.
  - 3. Proper thermal overload protection is in place for electrical equipment.
  - 4. Pre and final filters are clean and in place. If required, install temporary media in addition to final filters.
  - 5. Duct systems are clean of debris.
  - 6. Correct fan rotation.
  - 7. All fire, fire/smoke and volume dampers are in place and are in the full open position.
  - 8. Coil fins have been cleaned and combed.
  - 9. Access doors are installed and closed and duct end caps are in place.
  - 10. Terminal devices and air outlets are installed, connected and accessible and adjusted for full maximum flow.
  - 11. Duct system leakage has been minimized. All duct systems requiring Leakage Tests have been tested and accepted.
  - 12. Proper strainer baskets are clean and in place.

13. Correct pump rotation.
  14. Hydronic systems have been flushed, filled, and vented.
  15. Service and balance valves are open.
- B. Report to Architect/Engineer any defects or deficiencies noted during performance of services.
  - C. Promptly report abnormal conditions in mechanical systems or conditions which prevent system balance.
  - D. If, for design reasons, system cannot be properly balanced, report as observed.
  - E. Beginning of work means acceptance of existing conditions.

### 3.2 PREPARATION

- A. Provide instruments required for testing adjusting and balancing operations. Make instruments available to Architect/Engineer to facilitate spot checks during testing.

### 3.3 ADJUSTING

- A. Recorded data shall represent actually measured or observed condition.
- B. Permanently marked settings of valves, dampers, and other adjustment devices, allowing settings to be restored. Set and lock memory stops.
- C. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- D. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

### 3.4 WELDING INSPECTION:

- A. Visual Inspection: Perform in accordance with Industry Standards. Cut out and test defective welds. If the percentage of defective welds is excessive, cut out and test additional welds as directed by Architect/Engineer.

### 3.5 VERIFICATION OF CONTROL OPERATION

- A. General: Perform the checks outlined in the following for all air system controls:
- B. Thermostats and humidistats - Verify calibration and operation of all thermostats and humidistats. Any Deficiencies shall be reported for correction. Recheck after correction. Record thermostat set point and output signal, space temperature.
- C. Damper Operation - Verify operation and position for all dampers. Any Deficiencies shall be reported for correction. Recheck after correction.

- D. Other Controls - Simulate control operations with control contractor in accordance with design requirements and manufacturer's recommendations. Any deficiencies shall be reported for correction. Recheck after correction.

3.6 OPERATING TESTS:

- A. General: After the various systems are pressure-tested and cleaned as hereinbefore specified, each piping and air handling system shall be tested in the presence of the Commissioner. Five days advance written notice of the tests shall be given to the Commissioner by the Contractor who in turn will notify other parties interested. Furnish all gauges, instruments, test equipment and personnel required for the tests. Adjust all equipment to perform with the least possible noise and vibration consistent with its duty. Quietness of operation of all equipment is a requirement. Any equipment producing objectionable noise in occupied spaces must be repaired or removed and replaced with satisfactory equipment.
- B. Piping Systems: operate the cooling systems, and make adjustments in controls and equipment, and complete necessary balancing to deliver not less than the water quantities shown on the drawings at each equipment item.
- C. NC (Noise Criteria) Tests: Operate the air handling systems after balancing, to determine that the scheduled NC ratings in the spaces are not exceeded.

END OF SECTION 23 05 93



## SECTION 23 07 00 - HVAC INSULATION

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic mechanical materials and methods to complement other Division 23 Sections.
- B. Insulation for ductwork, piping, and equipment as described.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Section 23 05 00 - Common Work Results for HVAC.
- C. Section 23 05 48 - Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).
- D. Section 23 05 50 - Basic Mechanical Materials and Methods.
- E. This section is a part of each Division 23 Section.

#### 1.3 REFERENCES

- A. ANSI/ASTM C553 - Mineral Fiber Blanket and Felt Insulation.
- B. ASTM C335 - Thermal Conductivity of Pipe Insulation.
- C. ANSI/ASTM C612 - Mineral Fiber Block and Board Thermal Insulation.
- D. ASTM E84 - Surface Burning Characteristics of Building Materials.
- E. NFPA 255 - Surface Burning Characteristics of Building Materials.
- F. UL 723 - Surface Burning Characteristics of Building Materials.

#### 1.4 QUALITY ASSURANCE

- A. Applicator: Company specializing in ductwork insulation application with three years minimum experience.
- B. Insulation Materials: Insulation materials shall be manufactured at facilities certified and registered to conform to ISO 9000 Quality Standard.
- C. Insulation shall have composite (insulation, jacket or facing, and adhesive used to adhere the facing or jacket to the insulation) fire and smoke hazard ratings as tested by procedure ASTM E.84, NFPA 255 or UL 723 not exceeding:

Flame Spread: 25

Smoke Developed: 50

1. Accessories such as adhesives, mastics, cements, and tapes for fittings shall have the same component rating as listed above. All products or their shipping cartons shall bear a label indicating that flame and smoke ratings do not exceed requirements. Treatment of jackets or facings to impart flame and smoke-safety shall be permanent. The use of water soluble treatments is prohibited.

D. Asbestos shall not be used in the manufacture of insulation products.

1.6 SEISMIC DESIGN

- A. This project is located within a seismic zone requiring special provisions for support and restraint of equipment, components, and piping. See Section 23 05 48 – “23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).” for additional requirements.

1.7 SUBMITTALS

- A. Submit product data under provisions of Section 23 05 00.
- B. Include product description, list of materials and thickness for each service, and locations.
- C. Submit manufacturer’s installation instructions under provisions of Section 23 05 00.

PART 2 - PRODUCTS

2.1 INSULATION FOR PIPING

- A. Piping systems described shall be insulated as follows, including all flanges, fittings, valves, expansion joints, vents, drains and all other parts of the system. All piping subject to freezing such as in outdoor air or discharge plenums or outdoors shall be insulated with a minimum of 2" insulation.
- B. Insulation on all cold surfaces must be applied with a continuous unbroken vapor seal. Hangers, supports, anchors, etc. that are secured directly to cold surfaces must be adequately insulated and vapor sealed to prevent condensation.
- C. Insulation for outdoor piping shall be as described in Weatherproofing Finishes for Outdoor Insulation.
- D. Schedule of Insulation Type and Minimum Thickness:

PIPING SYSTEM	THICKNESS	TYPE
Outdoor domestic water.(for lengths see Plumbing Drawings)	2"	P-1
Domestic make-up water	½"	P-2

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PIPING SYSTEM	THICKNESS	TYPE
Low pressure steam (0 to 15 PSIG)  up to 1½" I.P.S. 2" to 6" I.P.S. Over 6"	  1½" 3" 3½"	  P-3 P-3 P-3
Low pressure steam condensate return and condensate pump discharge  up to 1½" I.P.S. 2" to 6" I.P.S. Over 6"	  1½" 3" 3½"	  P-3 P-3 P-3
Fuel oil supply and return.	1"	P-3
Steam safety and relief.	1"	P-3

E. Type P-1 Glass Fiber for Cold Pipes

1. Insulation shall be glass fiber with a maximum K factor of .24 at 75 degrees F mean temperature with factory applied all-service jacket.
2. Insulation shall be rigid, molded, one-piece, fiberglass insulation that is bonded with thermosetting resin, similar to Schuller Micro-Lok with AP-T Plus Jacket.
3. The longitudinal lap of the All Purpose Jacket shall have a pressure sensitive tape lap sealing system. Butt joints shall be sealed using manufacturer supplied butt strips.
4. All fittings, valves, flanges and pipe terminations shall be fully insulated with glass fiber insulation and molded fitting covers. Thickness of insulation shall be at least as great as that on the adjoining pipe and shall be vapor sealed.
5. Flange insulation shall extend a minimum of 1" beyond the end of the bolts, and the bolt area shall be filled with Mineral Wool Cement.

F. Type P-3 Glass Fiber for Hot Pipes:

1. Insulation shall be glass fiber with a maximum K factor of .24 at 75 degrees mean temperature and shall be furnished with a factory applied all-service jacket.
2. Insulation shall be capable of continuous service at a pipe temperature of 450°F without oxidation, burnout of binders, or development of odors or smoke.
3. Insulation shall be rigid, molded, one piece fiberglass insulation that is bonded with thermosetting resin, similar to Schuller Micro-Lok with AP-T Plus Jacket.

- 4. The longitudinal lap of the All Purpose Jacket shall have a pressure sensitive tape sealing system. Butt joints shall be sealed using manufacturer supplied butt strips.
- 5. All fittings, valves, flanges and pipe terminations shall be fully insulated with glass fiber insulation and molded fitting covers. Thickness of insulation shall be at least as great as that on the adjoining pipe.
- 6. Flange insulation shall extend a minimum of 1" beyond the end of the bolts, and the bolt area shall be filled with Mineral Wool Cement.

2.2 INSULATION FOR SHEET METAL

A. Insulate sheet metal as follows:

- 1. Outdoor ducts whether acoustically lined or not shall be insulated with 2" thick type D-2 and then weather proofed as specified under Weatherproofing Finishes for Outdoor Insulation. Exceptions: Toilet exhaust, general exhaust, smoke exhaust and stair pressurization ductwork.
- 2. Exhaust air ductwork from automatic dampers to discharge louvers (including sheet metal plenums behind louvers) - 2" type D-2.
- 3. Non air conditioned and non heated outside air supply 2" type D-2 for exposed ducts.

B. Type D-2 Rigid Duct Insulation With Vapor Barrier:

- 1. Rigid duct insulation shall be 4.2 lbs per cu. ft. density glass fiber with maximum K factor of .24 at 75 degrees F mean temperature with vapor barrier facing.
- 2. Insulation shall be impaled over welded pins applied to duct surface on 12" to 18" centers. Use a minimum of two rows of fasteners on each side of duct. Secure insulation with suitable speed washers or clips firmly imbedded into insulation.
- 3. All joints and voids in the insulation shall be filled with Mineral Wool Cement. All joints, speed washers and breaks in the vapor barrier shall be sealed with 3" wide strips of the vapor barrier facing adhered with vapor barrier adhesive.
- 4. Exposed duct work shall have a white reinforced foil vapor barrier facing. Care shall be taken in sealing joints speed washers, etc. with matching strips of vapor barrier to insure good appearance.

2.3 INSULATION FOR EQUIPMENT & BREECHINGS

A. The following Equipment & Systems shall be insulated with high temperature block insulation using Type E-3 insulation.

- 1. Boilers - 2 inch.    ) Package Boilers are  
   ) Usually Insulated  
   ) at Factory
- 2. Boiler Breechings - 2 inch.

B. Type E-3 High Temperature Block Insulation:

1. High temperature insulation shall be 11 lbs. per cu. ft. density molded hydrous calcium silicate with a maximum K factor of 0.42 at 200 degrees F mean temperature.
2. Insulation shall be securely wired in place with copper clad wire or galvanized steel bands ( $\frac{1}{2}$ " x .015) on 12" centers.
3. All joints and voids of insulation shall be filled and pointed with mineral wool cement.
4. Over the insulation apply 1" galvanized wire netting secured to the bands or wires and pulled down tight. They apply  $\frac{1}{4}$ " thick coat of Insulating and Finishing Cement trowelled to a smooth finish. This applies to both exposed and concealed work.
5. For kitchen exhaust ducts exposed in finished spaces cover the cement finish with glass cloth set in adhesive.
6. Sections of equipment requiring periodic servicing shall be insulated with aluminum covers lined with the same thickness of material as the adjoining insulation.

2.4 WEATHERPROOFING FINISHES FOR OUTDOOR INSULATION

A. Outdoor Round Duct:

1. Ductwork shall be insulated as specified under "Insulation for Sheet Metal" and provided with a weatherproof finish as described herein.
2. Finish with a .016" 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 manufacturer's recommendation.
3. 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 ( $\frac{1}{2}$ " x .020"), and seals applied on 12" centers with bands applied directly over butt overlaps. As an alternate the jacketing may be applied with Pli-Grip Rivets. Where jacketing is cut out or abuts an uninsulated surface, the joint shall be sealed with Insul-Coustic Sure Joint 405, or BF 30-45 Foam Seal.
4. Fittings shall be insulated and finished with mitered sections of the insulation with factory attached aluminum jackets installed per manufacturer's recommendation.

B. Outdoor Equipment, Rectangular Duct Work and Irregular Surfaces:

1. Ductwork, equipment and irregular surfaces shall be insulated as specified under this section and provided with a weatherproof finish as described herein.
2. The surfaces shall be weather protected with two coats of Insulcoustic VI-AC Mastic, I-C 551, or Benjamin Foster GPM Mastic with open weave glass cloth membrane imbedded between the coats. The total thickness of the coating shall be a minimum of  $\frac{1}{8}$ ".

**C. Outdoor Piping**

1. Piping shall be insulated as specified under "Insulation for Piping" and provided with a weatherproof finish as described herein.
2. Finish with a .016" 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 manufacturer's recommendation.
3. 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 ( $\frac{1}{2}$ " x .020"), and seals applied on 12" centers with bands applied directly over butt overlaps. As an alternate, the jacketing may be applied with Pli-Grip Rivets. Where jacketing is cut out or abuts an uninsulated surface, the joint shall be sealed with Insul-Coustic Sure Joint 405, or BF 30-45 Foam seal.
4. Fittings and valves shall be insulated and finished with mitered sections of the insulation with factory attached aluminum jackets installed per manufacturer's recommendation.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Install materials after ductwork has been tested and approved.
- B. Clean surfaces for adhesives.
- C. Do not startup and operate chilled water system prior to completion of insulation for the entire chilled water piping system and complete closure of building from the external atmosphere.
- D. Do not operate air handling system with conditioned air prior to completion of insulation of the entire duct distribution system for that air handling system.

**3.2 INSTALLATION**

- A. Insulation shall be applied on clean dry surfaces, after inspection and release for insulation application.
- B. Insulate all valves, flanges, couplings and fittings. Valve and flange insulation shall be removable and reinstallable.
- C. Do not startup and operate chilled water system prior to completion of insulation for the entire chilled water piping system and complete closure of building from the external atmosphere.
- D. Do not operate air handling system with conditioned air prior to completion of insulation of the entire duct distribution system for that air handling system.

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- E. Full lengths of insulation shall be used except at end of straight sections and as required to accommodate fittings. Insulation shall be applied with the joints tightly fitted together. Cracks or voids shall be filled with insulation. Manufacturer's recommended installation procedures shall be strictly adhered to.
- F. Insulation shall be continuous through wall and ceiling openings and sleeves. Where insulated piping or ductwork pierces fire rated partitions, walls, and floors, substitute anhydrous calcium silicate insulation with vapor barrier in lieu of fiberglass for a minimum of 8" from wall, to produce a hard surface for fire resistive packing.
- G. Insulation on cold surfaces where vapor barrier jackets are used shall be applied with a continuous, unbroken vapor seal. Hangers, supports, anchors, etc., that are secured directly to cold services shall be adequately insulated and vapor sealed to prevent condensation.
- H. The edges and seams at all visible locations shall be finished in a neat and workmanlike manner.
- I. All exposed ductwork insulation shall be applied with edges butted. Insulation shall be impaled over stick clips or pins welded to the duct, and secured with speed clips. Spacing of pins shall be as required to hold insulation firmly in place but not less than one pin per square foot. All joints and penetrations of the vapor barrier shall be sealed with a 3" wide strip of the same material, supplied with vapor barrier adhesive to both surfaces as recommended by adhesive manufacturers.
- J. Blanket insulation shall be tightly sealed at all joints and seams. Insulation shall be cut longer than ductwork perimeter to allow maximum thickness on all areas and avoid excessive compression. All joints shall be over lapped at least 2" and stapled in place. The stapled seams shall be sealed with a minimum 3" wide pressure sensitive tape designed for use with the duct insulation. All breaks in the vapor barrier facing shall also be sealed with the tape. The underside of ductwork 18" or greater in width, and vertical surfaces 48" or greater shall have the insulation additionally secured with mechanical fasteners and speed clips spaced approximately 12" on center. The protruding ends of the fasteners shall be cut off flush after the speed clips are installed, and then sealed with the same tape as specified above.
- K. Inserts shall be installed at hangers for cold insulated piping. Inserts between the pipe and pipe hangers shall consist of rigid pipe insulation of equal thickness to the adjoining insulation and shall be provided with vapor barrier where required. Inserts shall have sufficient compressive strength so that when used in combination with a sheet metal shield, they support the weight of the pipe and the fluid in it without crushing the insulation.
- L. Finished installation shall provide a continuous and effective vapor barrier.
- M. Refer to details on drawings.

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3.3 SCHEDULE

- A. As described under products.

END OF SECTION 23 07 00



**SECTION 23 09 00 - HVAC INSTRUMENTATION AND CONTROLS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1. Section 23 05 00 - Common Work Results for HVAC.
2. Section 23 05 50 - Basic Mechanical Materials and Methods.
3. This section is a part of each Division 23 Section (Mechanical).
4. Specified elsewhere:
5. Variable Speed Control
6. Pumps
7. Boilers
8. Fans
9. Testing, Adjusting and Balancing
10. Basic Elec. Materials Methods
11. Electrical Wiring

B. Technical Proposals

1. Technical proposals shall be prepared in accordance with these specifications. Four (4) copies of the proposal shall be submitted.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Electric, Electronic, and DDC Systems:
  - a. Alerton
  - b. Honeywell Inc.
  - c. Invensys, I/A.

- d. Johnson Controls Inc.
- e. Schneider Electric
- f. Siemens Inc.

## 2.2 SEQUENCES OF OPERATION

- A. Furnish and install complete, standalone system to control operation of boilers and all support equipment such as:
  - 1. Boiler feed pumps
  - 2. Fuel oil system
  - 3. Exhaust fans
  - 4. Unit heaters
- B. System shall be of electric/electronic type with all wiring done in accordance with NEC.
- C. Sequences of operations shall be as following:
  - 1. Boiler control, operation and Lead/Lag sequencing will be provided by boiler control system as specified in Section 23 52 00. Starting boiler will open ALD on combustion air intake louvers and start oil pump.
  - 2. Thermostat located in boiler room, on a drop of temperature to 40°F will start electric unit heater and on the rise of temperature above 85°F will start exhaust fan open ALD at the air intake louver. Exhaust fan also be controlled by carbon monoxide sensor located in the boiler room. When fan is activated by carbon monoxide sensor, alarm will sound.
  - 3. Similar will take place in full oil tank room.
  - 4. If oil spill is detected in the fuel oil tank room or boiler room, it will shut-down operation of the boiler(s) and fuel oil pump and activate alarm
  - 5. Thermostat located on spill pipe from blow-down tank will operate control valve on domestic water line to maintain spill temperature.
  - 6. Level sensor, located in the feed-pump receiver will control valve on domestic water line to maintain desirable level.

## PART 3 - EXECUTION

### 3.1 DESIGN CRITERIA

- A. The Control System shall be programmed to start and stop the HVAC equipment based on occupancy schedules as coordinated with the City of New York. System shall provide equipment interlock as required.

### 3.2 INSTALLATION CRITERIA

- A. Space mounted devices are to be identical in appearance. All devices shall be mounted under the same style cover.
- B. Room sensors and thermostats shall not be mounted on therma-plate..
- C. Provide all relays, switches, sources of electricity and all other auxiliaries, accessories and connections necessary to make a complete operable system in accordance with the sequences specified.
- D. Install controls so that adjustments and calibrations can be readily made.
- E. Conceal control conduit and wiring in all spaces except in the Mechanical Equipment Rooms and in unfinished spaces. Install in parallel banks with all changes in directions made at 90 degree angles.
- F. Install control valves horizontally with the power unit up. Installation of control valves will be by the mechanical contractor.
- G. Unless otherwise noted, install wall-mounted sensors, thermostats and humidistats to meet ADA requirements. Submit device samples, locations, mounting heights and details for approval for all devices.
- H. Install outdoor thermostats in perforated tube and sun shield.
- I. All relays, electrical wiring, panels, outputs, etc. to make a complete operational system, shall be provided and installed by this section. See sequences of operation for details.

### 3.3 COORDINATION

- A. Piping and duct installation requirements are specified in other Division 23 Sections. Coordinate installation of all devices furnished under this section to be installed by other trades with the appropriate trade.
- B. It is the responsibility of this contractor to coordinate with all trades the location of installed equipment and routing of all electrical control conduits and lines.
- C. Install control system components to allow for proper service and maintenance of equipment.

### 3.4 DEMONSTRATION

- A. Maintenance Data and Operating Instructions
  - 1. Description - Maintenance and operating manuals in accordance with Section 23 05 00, Common Work Results for HVAC.
    - a. Prepare data in the form of an instructional manual.

2. Manual for Equipment and Systems
  - a. Each item of equipment and each system: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions.
  - b. Panelboard Circuit Directories: provide electrical service characteristics, controls, and communications.
  - c. Include wiring diagrams as installed.
  - d. Operating Procedures: Includes start-up, break-in and routine normal operating instructions and sequences. Include regulation, control stopping, shutdown and emergency instructions. Include special operating instructions.
  - e. Maintenance Requirements: Include routine procedures and guide for preventative maintenance, trouble shooting; disassembly repair, re-assembly instructions including alignment, adjusting, balancing, and checking instructions.
  - f. Provide servicing and lubrication schedule for dampers and actuators. Provide a list of lubricants required.
  - g. Include manufacturers printed operation and maintenance instructions.
  - h. Include sequence of operation by controls manufacturer.
  - i. Provide control diagrams by controls manufacturer as installed.
  - j. Provide contractor's coordination drawings with control piping diagrams as installed.
  - k. Provide list of original manufacturer's spare parts. Provide a recommendation of quantities to be maintained in storage.
  - l. Provide additional requirements as specified in individual product specification sections.
3. Instruction of Facility Personnel
  - a. Before final inspection, instruct Commissioner's designated personnel in operation, adjustment and maintenance of products, equipment, and systems, at agreed upon times.
  - b. For equipment requiring seasonal operation, perform instruction for other seasons within six months.
  - c. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
  - d. Prepare and insert additional data in Operation and Maintenance manual when need for such data becomes apparent during instruction.
4. After all final tests and adjustments have been completed, fully instruct the proper Commissioner's Representative in all details of operation for equipment installed. Supply qualified personnel to operate equipment for sufficient length of time to assure that Commissioner's Representative is properly qualified to take over operation and maintenance procedures. Supply qualified personnel to operate equipment for sufficient length of time as required to meet all governing authorities in operation and performance tests.

5. Instruct Commissioner on the maintenance instructions for draining and protecting chilled water coils in the winter.

B. Display of Maintenance Instructions

1. One set of operating and maintenance instructions shall be neatly framed behind glass and hung adjacent to the equipment concerned.

C. Training

1. The Contractor shall provide competent instructors to give full instruction to designated personnel in the adjustment, operation and maintenance of the system installed rather than a general training course. Instructors shall be thoroughly familiar with all aspects of the subject matter they are to teach. All training shall be held during normal work hours of 8:00 a.m. to 4:30 p.m. weekdays.
2. Provide eighty (80) hours of training for Commissioner's operating and maintenance personnel. 40 hours shall be off site classroom training and 40 hours shall be on-site training. Videotape all sessions and edit each session to 1-hour tapes. Turn over two copies each unedited and edited tape to the Commissioner. Training shall include:
  - a. Explanation of drawings, operator's and maintenance manuals.
  - b. Walk-through of the job to locate all control components.
  - c. Operator workstation and peripherals.
  - d. DDC Controller and ASC operation/function.
  - e. Explanation of adjustment, calibration and replacement procedures.
3. Provide 8 hours of additional training quarterly during warranty period.
4. Since the Commissioner may require personnel to have more comprehensive understanding of the hardware and software, additional training must be available from the Contractor. If the Commissioner requires such training, it will be contracted at a later date. Provide description of available local and factory customer training. Provide costs associated with performing training at an off-site classroom facility and detail what is included in the manufacturer's standard pricing such as transportation, meals, etc.

3.5 ON-SITE ASSISTANCE

- A. Occupancy Adjustments: Within one year of date of Substantial Completion, provide up to three Project site visits, when requested by the Commissioner, to adjust and calibrate components and to assist Commissioner's personnel in making program changes and in adjusting sensors and controls to suit actual conditions.

END OF SECTION 23 09 00

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SECTION 23 09 10 – SPECIAL MECHANICAL SYSTEMS (Applicable for Keener and HELP SEC Buildings Only)

PART 1 - GENERAL

1.1 GENERAL CONDITIONS AND BID PROPOSAL SUBMITTAL REQUIREMENTS:

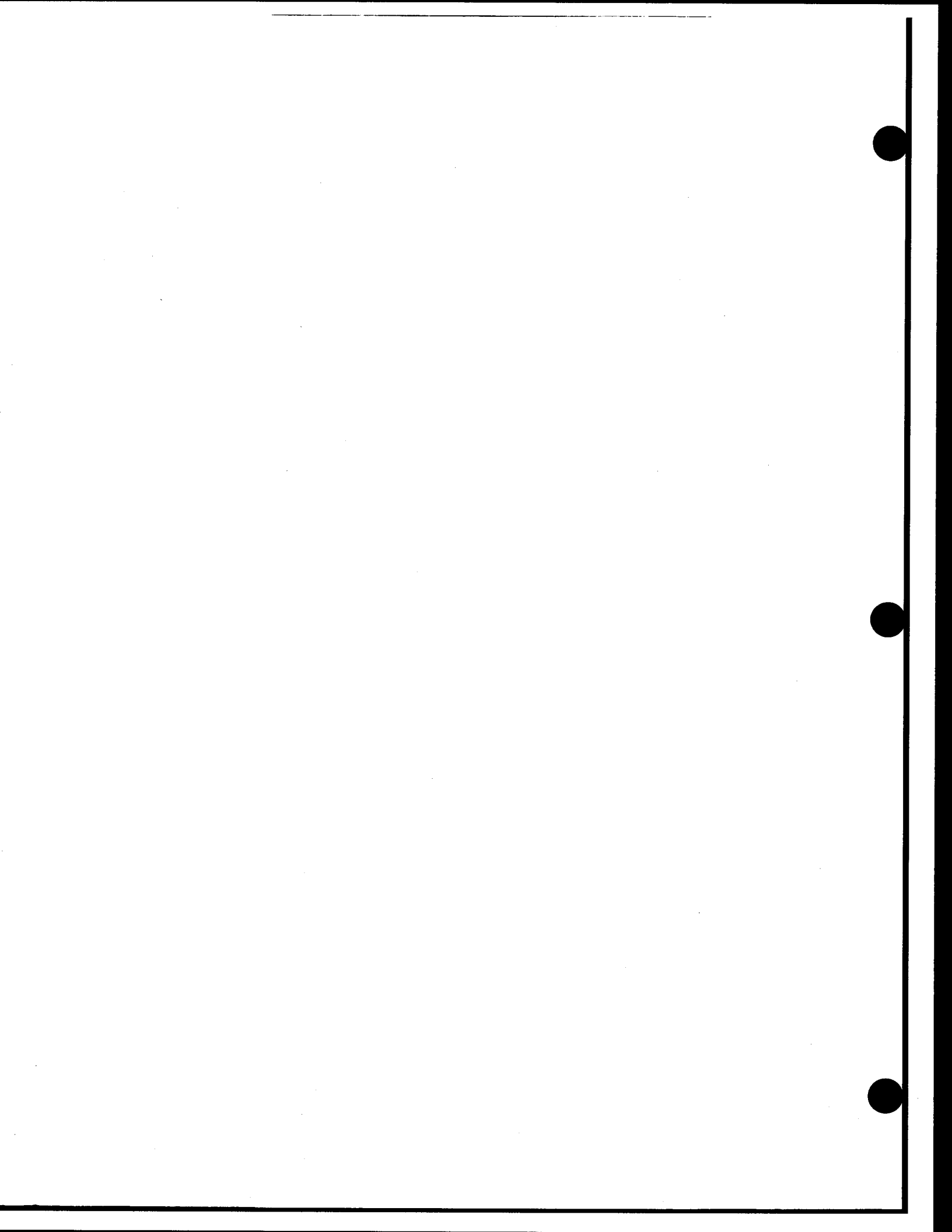
- A. The Contractor shall notify the Commissioner in writing regarding conflicting requirements, discrepancies or omissions in this specification. Upon written notification, the Commissioner will resolve all such matters.
- B. If the Contractor takes exception to any portion of this specification, each exception shall be cross-referenced to its paragraph and page number. All exceptions shall be clearly explained in a section of the proposal defined as "Exceptions to the Specification". If the vendor takes no exception to the specification, the proposal shall so state.
- C. This specification describes the packaged Modular Boiler Plant physical characteristics and operational requirements. It is not intended to arbitrarily eliminate consideration of alternative systems, which may be standard with certain manufacturers. However, the proposed system must be in complete technical compliance with this specification.

1.2 GENERAL REQUIREMENTS

- A. It is the intent of this specification to secure the packaged Modular Boiler Plant (MBP) that have been prototype tested, factory built, production tested, are of the latest commercial design, together with all accessories necessary for a complete installation as described in the specifications herein.

1.3 SCOPE

- A. The Contract work shall include furnishing of all labor, plant materials, transportation, appliances, and services including, but not limited to delivery of equipment, coordination of equipment delivery in conjunction with construction progress and all incidentals necessary to complete all work shown or reasonably inferred on the drawings and/or as described in the specifications.
- B. The listing in specifications or any article, material, operation, process, or method, means that the Contractor shall provide each item listed, of quality noted and subject to qualifications noted, and the Contractor shall perform each operation so described according to the conditions stated, furnishing therefore all necessary labor, materials, equipment, and incidentals required to complete the work.
- C. In the absence of any specific instruction or specification, workmanship of equal quality to that specified elsewhere in this document, or as approved by the Commissioner, shall be employed.
- D. Off-loading, setting in place, installation, interconnection and testing of all equipment specified herein shall be the responsibility of the Contractor, including any and all associated labor, parts, tools and equipment.





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- E. Any questions raised during the bidding period relative to any apparent discrepancies or omissions in the Specifications, interpretations of any provisions therein or their intent must be directed only to the Commissioner.

**1.4 QUALITY ASSURANCE**

- A. The MBP shall be assembled with components that conform to the latest edition of the following as applicable:

1. AHRI 550/590
2. Air Movement and Control Association, Inc. (AMC)
3. National Electrical Manufacturers Association (NEMA)
4. All electrical components and assemblies must comply and be selected with NEMA standards or IEC when specified.
5. HI – Hydraulic Institute
6. Uniform Plumbing Code (UPC)
7. New York City Building Code.
8. Underwriters Laboratories, Inc. (UL) or ETL Listed Mark by Intertek (ETL)
9. NEC / NFPA 70 – National Electrical Code for Power and Controls Wiring
10. American National Standards Institute (ANSI)
11. American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME)
12. OSHA – Occupational Safety and Health Administration

**1.5 SUBMITTALS**

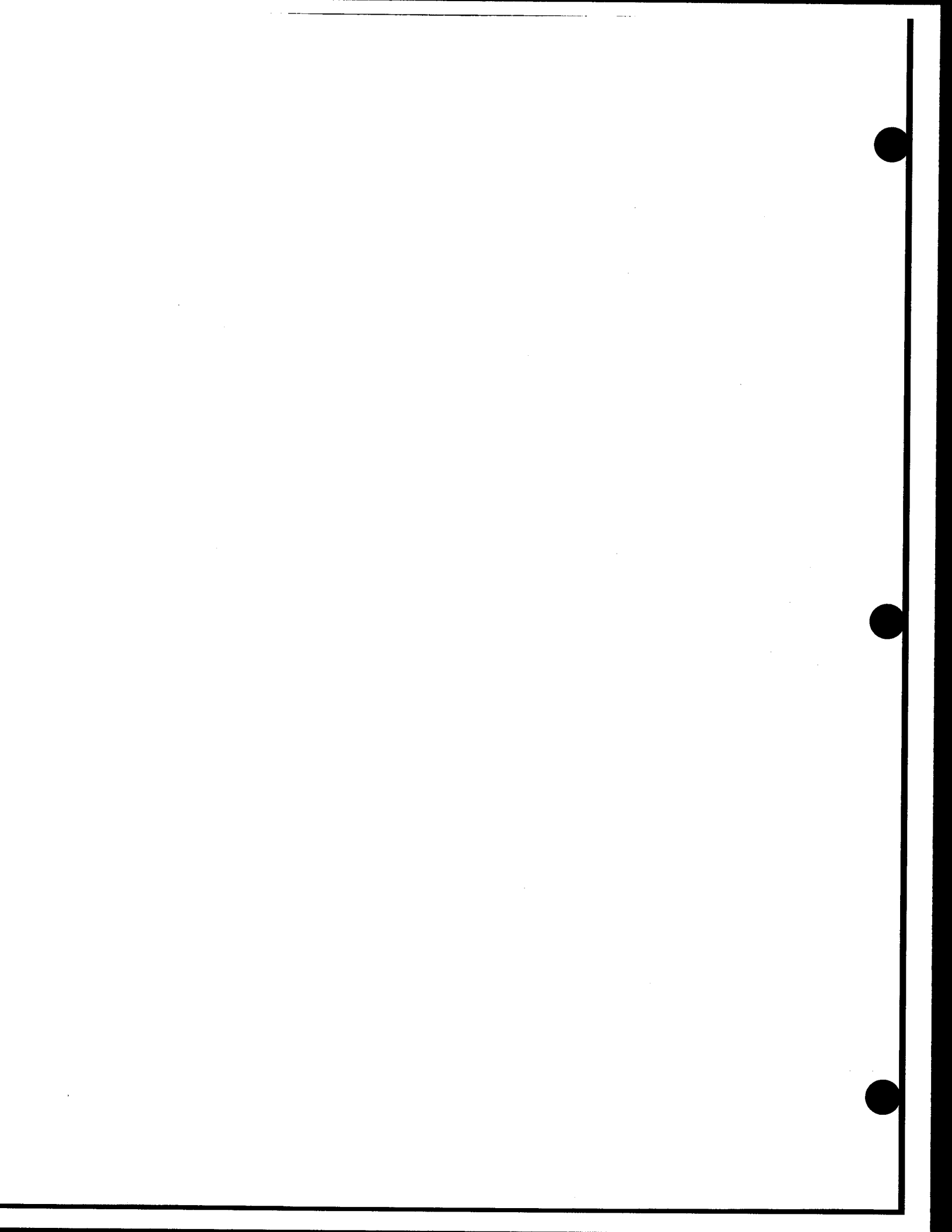
- A. Shop Drawings

1. The following drawings and information are to be submitted:
  - a. Detailed specifications and descriptions of equipment to be furnished.
  - b. Physical parameters of size, weight, wiring requirements, piping requirements and performance.
  - c. Requirements and extent of field assembly.
  - d. Details of items/services to be furnished under this contract and items/services to be furnished by local contractor.
  - e. List of spare parts, where they are stocked, normal delivery time after ordering, and qualified HVAC service organization.



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- f. Delivery schedule (lead time) for all equipment including shop drawing preparation and equipment fabrication as separate line items.
  - g. List all deviations from this specification.
  - h. Provide complete performance characteristics for equipment.
  - i. Sound performance characteristics.
  - j. Name and phone number of the two (2) nearest service organizations, which will have sufficient knowledge to service this equipment.
2. The following drawings and information (3 copies) are to be submitted for review after award of contract:
    - a. Detailed description of all equipment to be furnished, including elevations, dimensions of all equipment, shop drawings and installation drawings.
    - b. Size and weight of individual units to be handled in the field.
  3. The following drawings and information shall be submitted at the completion of work:
    - a. Three complete sets of operation and maintenance manuals. These manuals shall be applicable to all components of the equipment furnished as part of this Specification.
    - b. Spare parts list.
  4. Provide a complete MBP Submittal with all requirements as defined in the requirements of these specifications. As a minimum, the Submittal shall include the following:
    - a. Agreed to and finalized scope of work, including expected production schedule.
    - b. Project requirements summary with all power consuming equipment tabulated.
    - c. General Arrangement Drawings of plan and elevation views, including detailed dimensions, required clearances, weights, and location of all piping and electrical connections.
    - d. Process and Instrumentation Diagrams indicating piping configuration, pipe size, gauges, accessories, valves, and control points for field interface and connection.
    - e. Wiring Diagram and panel layout drawing. Includes field and factory wiring details. Ambient and emergency, battery operated light.
    - f. Complete Sequence of Operations for the logic of the MBP and its controls strategy, including Controller type, BAS interface type, software description and PLC/ALC points list.



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- g. Summaries of all auxiliary utility requirements such as: electricity, water, air, etc. Summary shall indicate quality and quantity of each required utility.
- h. Performance Data including component curves and system efficiency calculations.
- i. Manufactures technical documentation and submittals of all major MBP components.
- j. Acceptance testing documentation as required.
- k. Drawings stamped by Licensed Professional Mechanical Engineer as required.
- l. Installation and Start-up Instructions shall include operation and maintenance of major equipment as provided by component manufacturers.

**B. Documentation Standards**

- 1. Documentation shall be according to manufacturers Engineered Commercial Documentation Standard, Engineering Submittals that include MBP details, system process and instrumentation diagram (P&ID), electrical drawings and schematics, operational test reports, component performance sheets where required and major component manufacturer's catalog sheets.
- 2. Operation and instructions for all major equipment shall be provided to Commissioner during start-up of the equipment. Manufacturer's standard drawings shall be provided.

**C. Project Management**

- 1. Provide dedicated Project Manager from time of order through final commissioning to assure manufacturing supervision in accordance to approved submittals, and provide customer single point contact for manufacturing updates.
- 2. Final testing shall be performed by factory authorized and trained personnel. Operational training of Client Maintenance personal by the factory authorized and trained personnel is required. All commissioning efforts shall be coordinated through the independent commissioning agent, engaged by the City of New York.

**D. Quality Assurance**

- 1. The package system/plant manufacturer must be the manufacturer of the control panel used on the system.
- 2. All components used in the construction of the MBP will be constructed in accordance with ASME guidelines.
- 3. The package system/plant manufacture shall have in place a quality assurance program. Must be able to provide documentation of this program including the testing procedure that will take place.



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4. The manufacturer shall have a minimum of 3 years manufacturing and application experience and shall be responsible for the proper pressure and flow in the entire system.
5. The packaged system/plant manufacture shall perform a factory test. Included in this testing shall be the following: electrical, hydrostatic and run tested before shipment. The hydrostatic testing shall be for a minimum of thirty (30) minutes. The control(s) system shall be tested and all sequences and alarms shall be simulated.

E. Safety

1. Optional-Fire Extinguisher-An OSHA approved fire extinguisher shall be provided and mounted in accordance with locale codes or NFPA standards.

F. Construction Standard(s)

1. MBP structure, including base, walls and components shall be constructed according to Enclosed Commercial/Industrial Construction Standard.
2. This standard is designed to provide maximum value and quality in construction, components, controls and serviceability.

1.6 JOB CONDITIONS

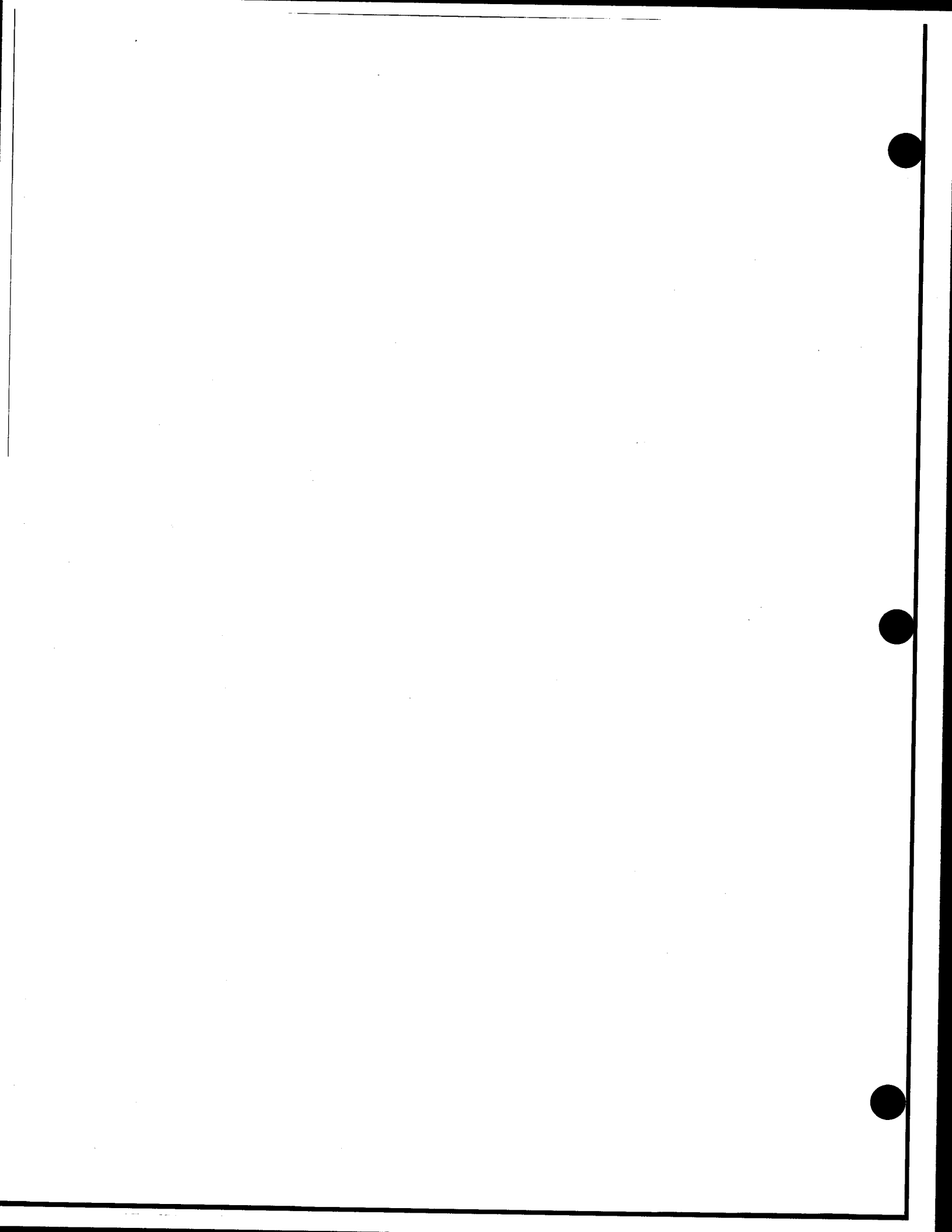
A. Time and Manner

1. Purchasing of the MBP shall be done by the General Contractor. All work inside the MBP by manufacturer. Final connections within the MBP to exterior systems such as steam, condensate return, domestic water and sewer, electricity, etc. by respective trade Contractor.
2. The City of New York requires that the work be completed as expeditiously as possible.
3. The time limit, which will be stated by the City of New York, will be the essence of the Contract, and the bidder's proposal must be based upon meeting the delivery date therein stated without any additional compensation from the City of New York.
4. The selected Contractor shall, therefore, furnish all labor and materials in sufficient quantities, and in ample time, do all the expediting and scheduling of the work required and so manage the operation that the work will be completed within the time stated in the Contract plus any extension thereof approved by the City of New York.

1.7 WARRANTY

A. Insurance

1. Before beginning any work at the site, the Contractor shall furnish certificates, in duplicate, showing coverage for insurance as required by the Commissioner.





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**B. Service Support**

1. Should it become necessary for the presence of a factory-trained service technician to be on site, the Contractor will arrange for one at no cost to the City of New York within one week after request, unless more expeditious response is identified in the respective technical specification any time during construction and before acceptance.

**C. Warranty**

1. The Contractor shall guarantee all equipment and accessories, specified herein, against faulty and improper material and workmanship for a period of one (1) year from the date of final acceptance by the Commissioner.
2. The Contractor shall promptly correct all deficiencies in this equipment which occur during the guarantee period, all to the satisfaction of the Commissioner, at no additional cost to the City of New York, including all site labor, transportation and related expenses.
3. The MBP shall include a One Year Parts Only Warranty on the entire MBP system and all contained equipment. It shall be responsibility of the commissioning agent to provide a signed-off start-up report in order to initialize the MBP Warranties.

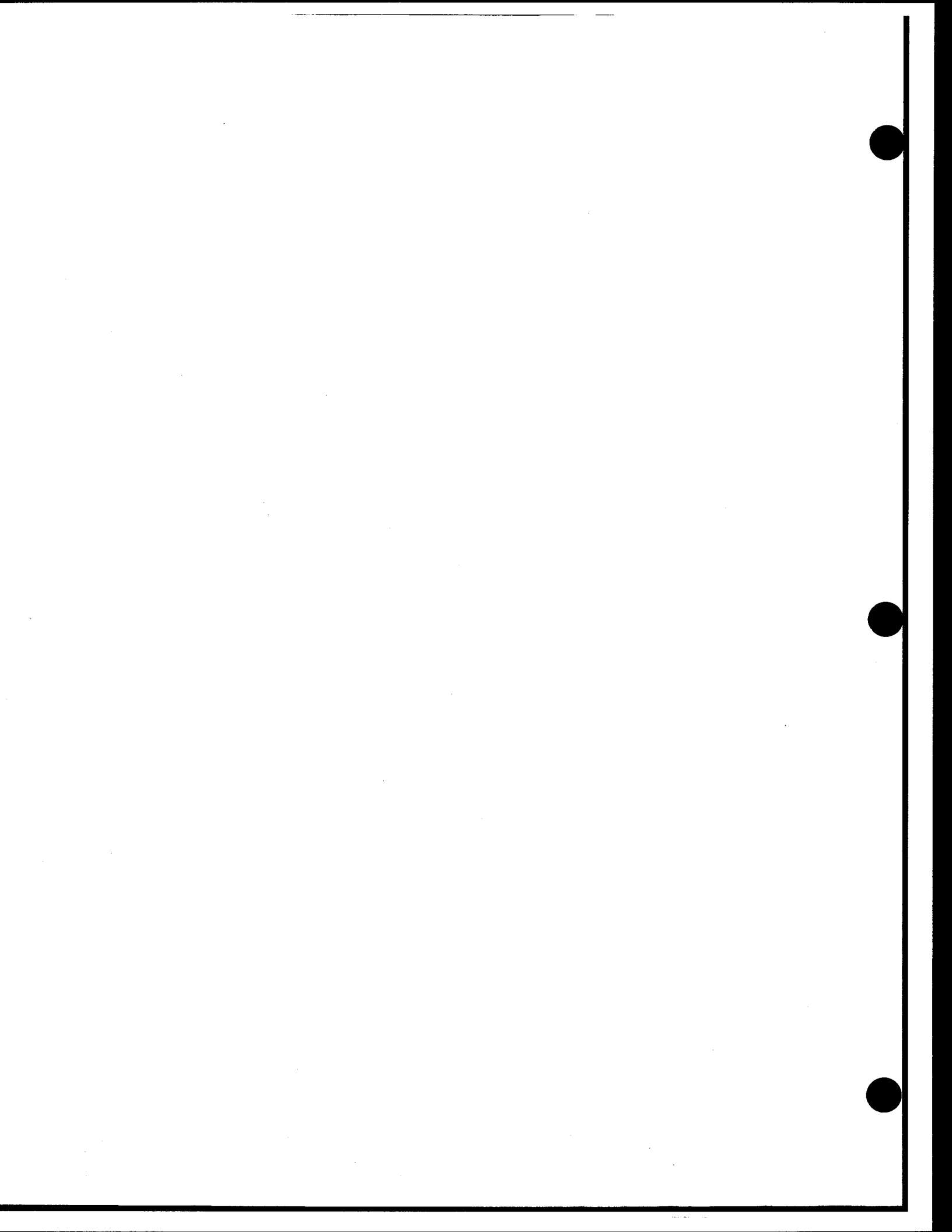
**PART 2 - PRODUCTS**

**2.1 ACCEPTABLE MANUFACTURERS**

- A. EnviroSep
- B. Epsilon
- C. Stellar

**2.2 ALTERNATIVE MANUFACTURERS**

- A. Alternative manufacturer(s) which meet these specifications must be approved in writing and shall provide the following:
  1. Complete MBP must be as a complete assembly with the following dimensions:
    - a. Keener building: 46'L X 34'-4"W X 13'-6"H
    - b. HELP SEC building: 46'L X 34'-4"W X 13'-6"H
    - c. All exterior devices such as louvers, doors oil fill and vents, etc. shall be as shown on contract documents and approved by PDC.
  2. All MBP manufacturing must take place according to UL or ETL standards and within a UL or ETL facility
  3. Equipment selection data and electrical parasitic load summary.



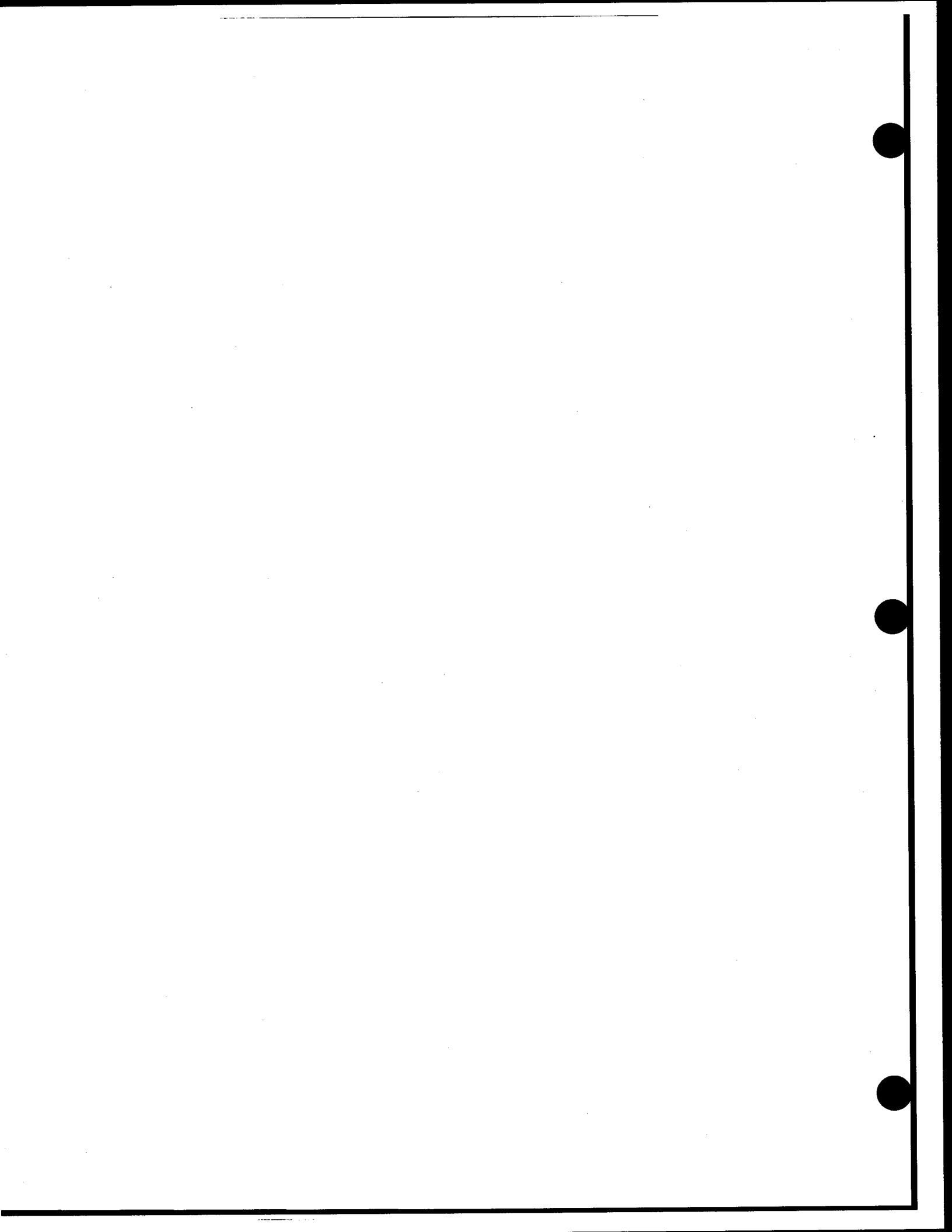
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4. Control sequence of operation.
5. General arrangement drawing of the alternate's package demonstrating compliance with space considerations.
6. Piping schematic of the alternate's package.
7. List of at least 5 similar installations with references.
8. Line item-by-item list of deviations to the specifications.
9. Provide a letter from an officer of the packaged plant manufacture stating that the exceptions listed are the only deviations from the specification.
10. Line item-by-item of deviations of the specifications
11. Provide a letter from the officer of the packaged plant manufacturer stating that the exceptions are the only deviations from the specification.

### 2.3 GENERAL

A. This package shall be factory assembled with:

1. This Modular Steam Boiler Central Utility Plant package shall be factory assembled with:
  - a. Boiler(s) (Refer to specification Section 23 52 00)
  - b. Boiler Stack (Refer to specification Section 23 51 00)
  - c. Feedwater Pump(s) (Refer to specification Section 23 21 23)
  - d. Blowdown Separator (Refer to specification Section 23 21 13)
  - e. Fuel oil tanks and pumps (Refer to specification 23 11 13)
  - f. Instrumentation (Refer to specification Section 23 09 00)
  - g. Valves (Refer to specification Section 23 21 13)
  - h. Piping accessories (Refer to specification Section 23 21 13)
  - i. Fabricated steel frame
  - j. Interconnection piping (welded per ASME Section IX certified welders) (Refer to specification Section 23 52 00)
  - k. Central System Industrial Control Panel factory wired for single-point field connection per NEC,



- I. The packaged system shall require only steam and condensate return pipe connections, domestic water and fire protection, electrical power connections, and necessary terminal contacts to the various field mounted devices and all above listed by others unless further mentioned or clarified.

## 2.4 PRODUCT COMPONENTS

- A. Structural Steel base
- B. The steel base shall consist of a structural steel perimeter with intermediate structural steel members at a minimum height of 6". A 3/16" checkered plate floor shall be welded to the base and serve as an intricate part of the structure.
- C. The base shall be designed for a maximum deflection of L/240 when the unit is fully operational and supported only at the perimeter and at unit splits
- D. The base frame shall be welded to a factory certified procedure that shall conform to the requirements of AWS D1.1.

## 2.5 DOUBLE WALL ACOUSTICAL ENCLOSURE

- A. All mechanical and electrical equipment shall be housed inside a factory fabricated double wall enclosure. The enclosure shall be fabricated by the same manufacturer as the steel base, pipe work and pipe supports to ensure structural integrity of the entire Packaged System. The use of a self-framing or sheet metal building that does not incorporate a structural steel wall framework, structural steel roof framework and lifting lugs is not acceptable. Wall between tank room and boiler room shall be 3 hr fire rated, have two walls each with a 1 hr. rating. Upgrade to 3 hr. rating will be done in the field by GC.
- B. The components of the enclosure shall be:
  1. Floor: shall be a minimum of 3/16" steel checker plate. When used with an enclosure, the perimeter of the floor shall be broken upward 1.5" to form a water dam and the corner seams shall be seal welded to form a watertight floor. The use of z-bar is permitted provided that the z-bar is continuously seam welded, not caulked.
  2. Exterior Panels: Wall and roof panels shall be fabricated from 16ga. satin coat steel and sealed with an individual strip of 1/2" x 3/8" tape sealer. Wall panel shall be 2" thick with seams turned inward to provide flush exterior finish. Exterior roof panels shall be 4" thick. Wall and roof exterior panels shall wrap around wall and roof structural framework to ensure thermal break.
  3. Structural Steel Base: When used with an enclosure, the perimeter members shall be, at a minimum, 8"x6"x0.188" hollow structural steel tube (HSS) and shall enable the installing contractor to shim the unit at 12 foot spans on site. The use of a c-channel or flanged steel perimeter is permitted provided the base is at least 12" deep.



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4. **Wall and Roof Structural Steel Framework:** an integral structural steel framework of hollow structural steel shall support the walls and roof. The framework members shall be, at a minimum, 3"x3"x0.188" HSS at 10-foot centers. The roof steel shall also support all pipe in the Packaged System higher than four feet from the floor or base level. The framework shall be primed and finish painted using the paint system described in this section.
5. **Roof Mounted Lifting Lugs:** If an enclosure is required and the package is to be split for shipping, then the wall and roof structural steel framework will be extended through the roof of the enclosure and incorporate lifting lugs so that the entire package can be lifted from the roof – no exceptions.
6. **Interior Wall Panels:** Interior walls panels shall be a minimum of 2" thick fabricated from a minimum of 22 ga. galvanized steel. The wall interior panel joints shall run horizontal (or 90 degrees to the exterior panels) to provide an acoustic break, and overlapped to be suitable for washing with a pressure washer or steam cleaned without risk of wetting the insulation. The wall panel shall be installed over top of the floor water dam such that any water run-off will drip onto the water-tight floor.
7. **Insulation:** The building envelope shall comply with the requirements of the 2011 New York City Energy Conservation Code and ASHRAE 90.1 2007. Walls shall have fiberglass insulation batting installed within wall cavities with a minimum cavity insulation R value of R-13. Continuous rigid insulation shall be installed between the wall panel and the framing, or on the interior of the framing, and shall have a minimum continuous R-Value of R-7.5. Floors shall have insulation with a minimum cavity R value of R-13. The roof shall have fiberglass insulation batting draped over purlins with a minimum R value of R-13, and additional un-faced fiberglass insulation batting installed parallel to purlins with a minimum R value of R-13. R-5 thermal spacer blocks shall be utilized. Alternatively, if insulation is entirely above the deck, it shall have a minimum continuous R value of R-20.

As an alternate compliance method to the R values specified above, the envelope elements shall meet the following maximum assembly U-factor values: 0.064 for walls, 0.055 for roof, and 0.0625 for floors.

For both compliance methods, all doors shall have a maximum U-factor of 0.70.

8. **Floor Drain Pan:** Fabricate floor drain pans as shown on the drawings at a minimum of 12"x18"x2" deep from 18 ga. stainless steel seal welded and covered with 3/4"x1/8" floor grating. The use of drain holes in the floor is not acceptable. Drain pans shall be sloped at a minimum of 1% to a drain 3/4" hole that shall be piped to the exterior of the unit and finished with a 2" male NPT thread.
  9. **Roof Covering:** The roof covering shall be standing seam panels.
- C. The enclosure shall have the following structural and seismic ratings:
1. A minimum snow/ sand load rating of 40 pounds per square foot.
  2. A minimum wind load rating of 150MPH.





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3. Use seismic zone 1 as the minimum seismic requirement.
- D. The enclosure panels shall be acoustically designed with a sound Transmission Loss (TL) rating. The TL values must be rated across the eight octave bands. Sound pressure levels shall be predictable from any distance from the enclosure when sound power levels from the sound generating equipment are known. Calculations that support the sound data shall be provided on request.
- E. All bases, enclosure floors and exteriors are to be factory painted. Enclosure paint shall have weather resistant finish that will withstand 500 hour exposure to the salt spray test specified in ASTM B 117. Paint shall be applied and allowed to dry for a sufficient amount of time before shipping. The paint shall be a non-isocyanate enamel that produces a durable, chemically resistant coating similar to urethane. The vehicle type shall be a cross-linked acrylic with an oxygenated and aromatic hydrocarbon solvent. All exterior surfaces shall be wiped down with thinners and prepared with a zero induction epoxy primer before applying paint. All interior surfaces shall be prepared with a high build epoxy primer before applying paint.
- F. Ventilation louver and damper: Install stationary, storm proof louver and motorized damper for forced ventilation of the enclosure as shown on the drawings. Louvers shall be 6 inches deep with extruded aluminum blades and frame and 19 gauge galvanized  $\frac{1}{2}$ " x  $\frac{1}{2}$ " bird screen. Damper blades shall be 4 inches deep, thermally broken with high-density polyurethane CFC injected insulation. Air leakage through a 48" x 48" damper shall not exceed 10.5 CFM/SQFT against 4" w.g. differential static pressure @ standard air. Operating temperature range shall be -40° to +200°F. Supply an actuator to modulate the damper open or close.

NOTE: Ventilation louvers at Keener Building shall be provided acoustical boot.

- G. STRUCTURAL AND SEISMIC REQUIREMENTS: The base, wall and roof steel framework, sheet metal enclosure and integral tower support steel shall be designed to meet or exceed the loading (wind, snow/ sand, live and dead loading, lifting) and seismic requirements outlined in the relevant parts of this section. The vendor must provide documentation demonstrating that this requirement will be met at the Commissioner's request.
- H. ACOUSTICAL REQUIRMENTS: The enclosure panels (if an enclosure is required) shall be acoustically rated at the sound transmission loss levels contained in this section to NRTL standards and listed by NRTL to be in accordance with ETL's procedures for acoustical testing. This listing shall be made available to the Commissioner upon request. Further, as part of the O&M the manufacturer shall provide detailed calculations (when required) demonstrating that the sound pressure levels stipulated in this section for this Packaged System shall not be exceeded when the unit is fully operational.
- I. WELDING: All pipe and structural steel shall be welded in accordance with the procedures outlined in this section – no exceptions. At the Commissioner's request, the manufacturer shall provide certified documentation of both the procedures and the welder's certification for that procedure.



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- J. **PAINTING:** All bases, enclosure floors and exteriors are to be factory painted in accordance with this section. At the Commissioner's request, submit the paint specification demonstrating that it will withstand 500 hour exposure to the salt spray test specified in ASTM B 117.
- K. **Electrical:** Provide and install in prefabricated plants all necessary electrical equipment (panels, transformers, disconnect switches, fuses, circuit breakers, etc.), receptacles outlets, J-boxes, lighting fixtures, switches for lighting control, exist signs (5W or less) be conduits, wires and emergency battery packs (with 90 minutes of battery run time). The electrical system shall complete, tested and fully operational. Coordinate short circuit rating of the electrical equipment with the electrical contractor. Coordinate point of electrical connection at the prefabricated plants from HELP SEC and Keener Buildings with associated electrical contractor. Provide 30 foot candles for lighting illumination in prefabricated plants. All material and installation shall meet all local and national code requirements including energy code. Refer to electrical specifications for additional information and requirements.
- L. **Fire Alarm:** Provide fire alarm wiring in conduit in prefabricated plants as required by code. Fire alarm devices will be provided by electrical contractor. Coordinate locations of fire alarms devices with electrical contractor. Refer to fire alarm system specification for additional information and requirements.
- M. **Sprinkler work** to be done by sprinkler contractor. Coordinate with fire protection drawings.
- N. **Reinsulate piping and equipment** which may be loose or broken in transportation.

### PART 3 – EXECUTION

#### 3.1 INSPECTION AND TESTING

- A. Include all test data and reports as required by this section as part of the Operation and Maintenance manual, including:
  - 1. Vendor's Inspection and Test Report verifying compliance with this specification on an item by item basis.
  - 2. NEC, UL or ETL, and OSHA certified compliance report.
  - 3. Pump performance test results.
  - 4. Hydrostatic pressure test results.
  - 5. Structural and seismic calculations as required.
  - 6. Acoustical calculations demonstrating sound power levels.
  - 7. Non-destructive (X-ray) test results.



### 3.2 SHIPPING PREPARATION

- A. Piping shall be provided with external painting to provide corrosion protection. Interior of piping shall be flushed with a water-soluble corrosion inhibitor and then drained to prevent freezing.
- B. All equipment and components shall be identified with equipment number specified or as shown on the shop drawings to assist field assembly and erection. Equipment numbers will be marked by the Buyer on the approved shop drawings. All items shipped shall be accompanied by instructions for storing and protecting in English.
- C. All equipment shall be sealed to prevent entry of water, dirt or other foreign matter. Seals used in nozzles shall not affect threads, weld preparation or flange faces. Each section of the Packaged System shall be entirely shrink wrapped with a minimum 10 mil plastic shrink wrap. Shrink wrapping only open ends of the enclosure is not acceptable. All equipment and components shipped loose or on skids shall be properly packaged to withstand recommended method of shipment without damage. Each package shall be clearly labeled on the outside as to its contents.
- D. Include a complete packing list and bill of material.
- E. Provide consumables required during the installation for all equipment furnished including, but not limited to, flange bolts, sheet metal screws, rubber roofing for unit splits, roofing glue and caulking.

### 3.3 The Contractor is responsible for the following:

- A. Removal of protective wrapping such as shrink-wrap, wood crating, and packing.
- B. Receiving (including interior and exterior inspection).
- C. Inspect interior and exterior and report any obvious damage, or equipment shifting that may have taken place between the time the unit left the factory and arrived at job curb.
- D. Roof preparations: Contractor is responsible for supplying, and installing all roofing materials including caulking, and sundry items needed to accept unit into place. Roofing equipment can consist of, but is not restricted to roof curb, sleepers, structural beam, vibration rails with springs. It is the contractor's responsibility to confirm roofing equipment to be supplied by Vendor.
- E. Hoisting and rigging the section(s) into final location as per the instructions supplied with the unit.
- F. Join the sections (if shipped in sections) following the instructions enclosed with the unit.
- G. Re-install any equipment, pipe, stacks or enclosure trim shipped loose due to shipping constraints.
- H. Leveling, shimming as needed, and as per manufacturers instructions.
- I. Tighten all mechanically fastened connections that may have vibrated loose during shipping.



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- J. Re-align and level equipment including pumps.
- K. Insulate all piping and equipment that is required.
- L. Flushing and filling the system.
- M. Install all life safety equipment as needed.
- N. All field connections to the MBP including piping, electrical, and drainage to be done by trade contractor.
- O. factory authorized and trained personnel the MBP systems.
- P. Touch up and paint scratches and minor dents occurred during hoisting and rigging.
- Q. Permits and inspections needed to start system up.
- R. Startup of system with the supervision of the manufacturer's personnel.

END OF SECTION 23 09 10





## SECTION 23 09 95 - ENCLOSED CONTROLLERS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the furnishing of AC individually enclosed motor controllers rated 600 V and less of the following types:
  - 1. Across-the-line, manual and magnetic controllers.
- B. Related Sections include the following:
  - 1. Division 26 Section "Enclosed Controllers (Installation of)."
  - 2. Division 26 Section "Selection of Overcurrent Devices" for OCD's and disconnect switches used with motor controllers.
  - 3. Division 23, "Variable Frequency Controllers"

#### 1.3 SUBMITTALS

- A. Product Data: Include dimensions and manufacturer's technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each enclosed controller.
  - 1. Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:
    - a. Enclosure types and details.
    - b. Nameplate legends.
    - c. Short circuit current rating of integrated unit.
    - d. UL listing for series rating of overcurrent protective devices in combination controllers.
    - e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices in combination controllers.
  - 2. Wiring Diagrams: Power, signal and control wiring.
- C. The term "withstand" means the unit will remain in place without separation of any of its parts from the device when subject to specified seismic force, and for smoke control fan units - will remain operational.
- D. Operation and Maintenance Data: In addition to items specified in Division 01 Section, include maintenance requirements.

- E. Maintenance Data: For enclosed controllers and components to include in maintenance manuals specified in Division 01.
- F. Load-Current and Overload-Relay Heater List: Compile after motors have been installed and arrange to demonstrate that selection of heaters suits actual motor nameplate full-load currents.
- G. Load-Current and List of Settings of Adjustable Overload Relays: Compile after motors have been installed and arrange to demonstrate that dip switch settings for motor running overload protection suit actual motor to be protected.

#### 1.4 QUALITY ASSURANCE

- A. Listing and Labeling: Provide products specified in this Section that are Underwriters Laboratories listed and labeled.
  - 1. The terms "listed" and "labeled" shall be defined as they are in the National Electrical Code, Article 100.
- B. Single Source Responsibility: Obtain similar motor control devices from a single manufacturer.
- C. Comply with NFPA 70, as amended by state and local codes.

#### 1.5 COORDINATION

- A. Coordinate features of enclosed controllers and accessory devices with pilot devices and control circuits to which they connect.
- B. Coordinate features, accessories, and functions of each enclosed controller with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers: The following vendors will be reviewed for approval providing they meet all of the performance requirements of the specifications.
  - 1. ABB Power Distribution, Inc.; ABB Control, Inc. Subsidiary.
  - 2. Eaton Corporation; Cutler-Hammer Products.
  - 3. General Electrical Company; GE Industrial Systems.
  - 4. Siemens/Furnas Controls.
  - 5. Square D.

#### 2.2 ACROSS-THE-LINE ENCLOSED CONTROLLERS

- A. Manual Controller: NEMA ICS 2, general purpose, Class A, with "quick-make, quick-break" toggle or pushbutton action, and marked to show whether unit is "OFF," "ON," or "TRIPPED."

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1. Overload Relay: Ambient-compensated type with inverse-time-current characteristics and NEMA ICS 2, Class 10 tripping characteristics. Relays shall have heaters and sensors in each phase, matched to nameplate, full-load current of specific motor to which they connect and shall have appropriate adjustment for duty cycle.
- B. Magnetic Controller: NEMA ICS 2, Class A, full voltage, nonreversing, across the line, unless otherwise indicated.
  1. Control Circuit: 120 V; obtained from motor power circuit via integral control power transformer of sufficient capacity to operate connected pilot, indicating and control devices, plus 100 percent spare capacity.
  2. Overload Relay: Ambient-compensated type with inverse-time-current characteristic and NEMA ICS 2, Class 20 tripping characteristic. Provide with heaters or sensors in each phase matched to nameplate full-load current of specific motor to which they connect and with appropriate adjustment for duty cycle.
- C. Combination Magnetic Controller: Factory-assembled combination controller and disconnect switch. Padlockable in open position.
  1. Fusible Disconnecting Means: NEMA KS 1, heavy duty, fusible switch with rejection type fuse clips rated for fuses. Select and size fuses to provide Type 2 protection according to IEC 947 4 1, as certified by a Nationally Recognized Testing Laboratory.
  2. Circuit Breaker Disconnecting Means: NEMA AB 1, motor circuit protector with field adjustable, short circuit trip coordinated with motor locked rotor amperes.
  3. Nonfusible Disconnecting Means: NEMA KS 1, heavy-duty, nonfusible switch.

## 2.3 RATINGS

- A. Controllers bear U.L. short circuit ratings of 100,000 amps with appropriate line side fuses on a series rated basis, and are labeled accordingly.

## 2.4 WIRING

- A. Wiring within controller is copper.

## 2.5 ENCLOSURES

- A. Description: Surface mounted cabinets. NEMA 250, Type 1, unless otherwise indicated to comply with environmental conditions at installed location.
  1. Outdoor Locations: NEMA 250, Type 3R.
  2. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
- B. Covers are interlocked with disconnecting means.

## 2.6 ACCESSORIES

- A. Devices are factory installed in controller enclosure, unless other indicated.

- B. Push-Button Stations, Pilot Lights, and Selector Switches: NEMA ICS 2, heavy-duty type. Selector switches are key operated, with key removable only in "Remote" or "Auto" position as applicable.
- C. Relays: Provide auxiliary and adjustable time-delay relays as follows:
  - 1. Auxiliary control circuit relay for each magnetic controller NEMA Size 1 and larger, arranged to prevent holding coil currents into the external control circuit.
  - 2. Phase-failure and undervoltage relay for each magnetic controller size 5 and larger. Adjustable undervoltage setting.
  - 3. Time delay relay for each magnetic motor controller 10 HP and larger. Adjustable time closing from 0.05 to 180 seconds, arranged to delay motor starting.
  - 4. Undervoltage lockout relay for magnetic controllers where so indicated on drawings.

### PART 3 - EXECUTION

#### 3.1 APPLICATIONS

- A. Select features of each enclosed controller to coordinate with ratings and characteristics of supply circuit and motor; required control sequence; duty cycle of motor, drive, and load; and configuration of pilot device and control circuit affecting controller functions.
- B. Select horsepower rating of controllers to suit motor controlled.
- C. Use fractional-horsepower manual controllers for single-phase motors, unless otherwise indicated.
- D. Hand-Off-Automatic (and Hand-Off-Remote) Selector Switches: Except as otherwise indicated, factory install in covers of manual and magnetic controllers of motors started and stopped by central control system and/or automatic controls or interlocks with other equipment. Make control connections so only the manual and automatic control devices that have no safety functions will be bypassed when the switch is in the hand position. Connect motor control circuit in both hand and automatic positions for safety type control devices such as low - and high - pressure cutouts , high temperature cutouts, and motor overload protectors. Switches are of the key-operated cylinder lock type, with key removable only in auto (remote) position. All locks are keyed alike.
- E. Pushbutton Stations: Except as otherwise indicated, momentary-contact, start-stop units. Provide in covers of magnetic controllers for manually started motors where indicated, and connect start contact in parallel with sealing auxiliary contact for low voltage protection.

#### 3.2 INSTALLATION

- A. Installation of motor controllers will be performed as part of the work of Division 26 (Electrical).
- B. Installation of motor control devices will be performed as part of the work of this trade.

### 3.3 CONTROL WIRING

- A. Control wiring for HVAC motors is provided as part of the work of Division 23:
1. For each fan motor whose operation for smoke and fire control purpose is to be automatically and/or manually controlled by the Fire Protective Alarm System (FPA), 5 #14 wires run in conduit from the motor controller or VFC specified elsewhere to an adjacent FPA addressable module will be provided as part of the electrical work.
  2. Additional control wiring for dampers whose operation for smoke and fire control purposes by the FPA is independent of any motor start-stop control is provided as part of the electrical work.
- B. Control wiring is accomplished utilizing #14 AWG copper conductor with THWN insulation as specified in Division 26, Section "Conductors and Cables", run in conduit as specified for feeders in Division 26, Section "Raceways and Boxes".
- C. Any necessary field installed make-up wiring within motor controller enclosures as required to incorporate the contained devices and accessories into the control scheme will be provided as part of the electrical work.

END OF SECTION 23 09 95

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## SECTION 23 11 13 - FUEL OIL SYSTEM PIPING AND STORAGE TANKS

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This Section includes piping, specialties, and accessories for fuel oil systems including fuel oil storage tanks.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 23 00 01 - Seismic, Wind, and Flood Load Design.
- C. Section 23 05 00 - Common Work Results for HVAC.
- D. Section 23 05 50 - Basic Mechanical Materials and Methods.
- E. This section is a part of each Division 23.

#### 1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Minimum Working-Pressure Ratings: Except where otherwise indicated, minimum pressure requirements are as follows:
  - 1. Oil Piping and Fittings: 250 psig (1725 kPa).
  - 2. Underslab, Containment-Conduit Piping: 175 psig (1200 kPa).
- B. System shall meet the seismic design requirements as outlined under another section of this work.

#### 1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product Data including size, dimensions, rated capacity, pressure rating, settings, and operating characteristics of selected models, for the following:
  - 1. Each type and size of fuel oil transfer pump.
  - 2. Each fuel oil system specialty.
  - 3. Special-duty valves.
  - 4. Containment-conduit piping system.
  - 5. Fuel oil tanks - size, construction data, tapping connections and locations, details of anchoring and hold down straps.
  - 6. Fuel oil leak detection system, all components, wiring diagrams and manufacturer's literature.

- C. Coordination Drawings for fuel oil piping, storage tanks, including required clearances and relationship to other services for same work areas.
- D. Wiring diagrams detailing wiring for power, signal, and control systems for each item of equipment with electric power supply and differentiating between manufacturer-installed and field-installed wiring.
- E. Test reports specified in "Field Quality Control" Article in Part 3.
- F. Maintenance data for fuel oil specialties and special-duty valves to be included in the operation and maintenance manual specified in Section 23 05 00.

#### 1.5 QUALITY ASSURANCE

- A. Comply with NFPA 30, "Flammable and Combustible Liquids Code," and NFPA 31, "Installation of Oil Burning Equipment," for fuel oil piping materials, components, installations, inspection, and testing.
- B. Comply with NFPA 70, "National Electrical Code," for electrical connections between wiring and electrically operated control devices.
- C. Provide listing/approval stamp, label, or other marking on equipment made to specified standards.
- D. Listing and Labeling: Provide equipment and accessories specified in this Section that are listed and labeled.
  - 1. Terms "Listed" and "Labeled": As defined in National Electrical Code, Article 100.
  - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.
- E. Product Options: Drawings indicate size, profiles, connections, dimensional requirements, and characteristics of fuel oil piping equipment, specialties, and accessories and are based on specific types and models indicated. Other manufacturers' equipment and components with equal performance characteristics may be considered. Refer to Section 23 05 00.

#### 1.6 SEISMIC DESIGN

- A. This project is located within a seismic zone requiring special provisions for the support and restraint of equipment, components and piping. See Section. 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).

#### 1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Comply with manufacturer's recommendations for handling and storing tanks.
- B. All shipping and transportation permit costs shall be borne by this contractor.



## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: The following vendors will be reviewed for approval providing they meet all the performance requirements of the specifications.
1. Gate, Globe, and Check Valves:
    - a. Conbraco Industries, Inc.; Apollo Div.
    - b. Grinnell Corp.
    - c. Milwaukee Valve Co., Inc.
    - d. Stockham Valves & Fittings, Inc.
  2. Ball and Butterfly Valves:
    - a. DeZurik.
    - b. Neles-Jamesbury, Inc.
  3. Fuel Oil Transfer Pumps:
    - a. Preferred Utilities Manufacturing Corp.
    - b. Viking Pump, Inc.
    - c. Webster Heating.

### 2.2 PIPES AND TUBES

- A. All piping shall be steel with welded fittings (galvanized pipe and fittings are not permitted).
- B. Steel Pipe: ASTM A 53; Type S, seamless; Grade B; Schedule 40; black.

### 2.3 PIPE INSULATION

- A. As specified under another section.

### 2.4 PIPE AND FITTINGS

- A. All piping shall be provided with ground joint unions at piece of apparatus to facilitate connecting and disconnecting.
- B. All horizontal fuel oil piping, within the building shall be installed in a minimum 10 ga. conduit and completely encased with an approved two (2) hour (minimum) fire rated enclosure. All vertical fuel oil piping runs shall be installed in a four (4) inch masonry or concrete shaft.
- C. Fuel oil piping, where buried underground, shall be A-120 or A-53 Schedule 80 ERW with extra heavy galvanized malleable iron screwed fittings or extra heavy welded fittings, and shall be field painted with asphaltum. Use of a factory applied coating equal to X-TRU coat as manufactured by General Steel Industries is also permissible. Piping shall be provided with cathodic protection.

- D. Steel Fittings: ASTM A 234 (ASTM A 234M), welded, for welded joints.
- E. Steel Flanges and Flanged Fittings: ASME B16.5.
- F. Unions: ASME, Class 300, malleable iron with brass-to-iron seat, ground joint, and threaded ends conforming to ASME B1.20.1.
- G. Transition Fittings: Type, material, and end connections to match piping being joined.

## 2.5 JOINING MATERIALS

- A. Common Joining Materials: Refer to Division 23 Section "Basic Mechanical Materials and Methods" for joining materials not included in this Section.
- B. Gaskets for Flanged Joints: Full faced for cast-iron flanges and ring type for steel flanges. Select materials that suit service of piping in which gasket is installed and is not detrimentally affected by chemical and thermal conditions of fuel oil.

## 2.6 PIPING SPECIALTIES

- A. Pipe Connectors: UL 567, swivel or compression type for connection to equipment.
- B. Strainers: Y pattern, full size of connecting piping. Include stainless-steel screens with 3/64-inch (1.2-mm) perforations, except where other screens are indicated.
  - 1. Pressure Rating: 250-psig (1725-kPa) WOG working pressure.
  - 2. 2-Inch NPS and Smaller: Bronze body.
  - 3. 2-1/2-Inch NPS and Larger: Cast-iron body.
  - 4. Screwed screen retainer with centered blow-down and pipe plug.
  - 5. Strainer shall produce less than 1/2 psi pressure drop through a clean strainer basket at the maximum flow in the suction line.
- C. Refer to Division 23 Section 23 05 48 for flexible pipe connectors.

## 2.7 VALVES

- A. General: All valves shall be rated for a minimum of 250 psig WOG working pressure.
- B. Valves shall be as specified under another section of Division 23.

## 2.8 SPECIALTY VALVES

- A. Oil Safety Valves: UL listed for flammable or volatile liquids, 250-psig (1725-kPa) working pressure, and 550 deg F (288 deg C) operating temperature. Include ASTM B 61 bronze body, bronze bases and discs; and field-adjustable, cadmium-plated, carbon-steel springs; factory set at 20 percent above operating pressure; and threaded ends conforming to ASME B1.20.1.

- B. Provide and install on the tank suction stub a bronze, 1-1/2" Double Poppet Foot Valve, with lapped-in seat, double guided poppet stems and 20 mesh monel screen. Double Poppet Foot Valve shall be as supplied by Preferred Utilities Manufacturing Corporation, Model Type 22. The foot valve shall come with a 233-FV foot valve extractor fitting which shall allow for easy access to and repair of the foot valve. The 233-FV foot valve extractor fitting shall come with an extractor wrench of the appropriate size.

## 2.9 FUEL OIL TRANSFER PUMPS AND PIPING

- A. Provide a factory assembled "packaged" duplex fuel oil pump and piping system as scheduled and detailed on drawings. The set shall be piped and wired, with components mounted on a steel base support fabricated of 1/4" steel plate with 4" steel side rails continuously welded to the base. The base support to be fabricated with 2-3/4" overflow containment lip and base shall extend beyond any fitting, valve, pump, strainer or selector valve. Any fuel leaking from any component, fitting or packing in the system shall be contained by this baseplate. Base shall be grouted and anchored in the field to the housekeeping pad to minimize vibration and movement. In the Rupture Basin through a 3/4" welding boss, shall be a Preferred Utilities Manufacturing Corporation RBS switch for leak detection.
  - 1. Switch shall be redundantly sealed against vapors and fluids, be lever float operated and magnetically actuated. Wiring enclosure shall be cast aluminum and constructed to NEMA 4 standards. Visual and audible alarm and annunciation for the pump set rupture basin shall be located on the pump set control cabinet. Provide a 1/2" plugged drain connection in the Rupture Basin.
- B. Provide a NEMA 4X enclosure mounted on the pump set. This panel shall match the main fuel oil management control center specifications and shall include the following:
  - 1. Run light for each pump, 22mm diameter, red lens.
  - 2. "Remote-Off'Hand" switch for each pump
  - 3. Green pilot light to indicate safety permissives met for pump run
  - 4. Lockable disconnect for both the pumps
  - 5. Motor starters with overload protection for each pump
  - 6. Circuit breaker for over-current protection for each pump
- C. Description: UL 343, single-stage, internal-gear, positive-displacement, rotary type. Include foot-mounted, cast-iron housing; steel gears; bronze bearings; steel shaft; mechanical seals; built-in pressure relief bypass; steel base; and drive coupling.
  - 1. Drive: Direct drive, close coupled.
- D. Motor: Split phase for single-phase motors; capacitor start, induction run, totally enclosed for 3-phase motors.
- E. The pumps shall be connected to the piping in the set through stainless steel flexible metallic metal jackets, and the pump and motor assemblies shall be mounted to the base plate via elastomeric vibration isolators. Pumps and motors shall be mounted on a structural steel channel and equipped with flexible coupling and full OSHA approved coupling guard. Pumps and motors shall be removable for ease of maintenance.

- F. Flexible coupling general: The pumps shall be connected to the motor by an elastomeric jaw type flexible coupling that does not require lubrication. The coupling wear member shall be replaceable without disturbing the alignment of either the pump or motor. Sizing of the flexible coupling shall be based on motor horsepower and rpm. Materials of construction: The coupling body shall be sintered iron and case iron. The elastomeric wear member shall be NBS rubber.
- G. Provide a time delayed flow sensing switch on the discharge of the pumpset to bring on the lag pump should the lead pump fail to maintain flow in the loop. Switch will be wired back to the main control cabinet for alarm and annunciation.
- H. Furnish and install a complete system of piping with all necessary valves between the system components. Provide a swing check valve and gate valve at the pump inlet. Provide approved anti-syphon valve at high points of suction line. Install fusible link valve on oil supply immediately adjacent to point where pipe enters boiler room generator room in accessible location. Valve shall have provision to close manually preferred or equal. Install whatever additional valves may be required by local or state regulations.

#### 2.10 OIL FILL LINES & VENT TERMINALS

- A. Vent pipe line shall be provided from the fuel oil storage tank to the required height within building construction and shall terminate with a vent set in masonry. Fitting shall be one piece. Each oil tank vent pipe terminal shall be provided with a weatherproof vent head the approved equal of "Preferred Junior Vent Protector with Screens."
- B. Fuel oil fill line shall be provided from the fuel oil storage tank within the building property line terminating with a fill box. Fuel oil fill box shall be EPA and local code approved. Fuel oil fill box shall include cover and spill containment cap. Provide remote overflow alarm bell and light with tank mounted sensor. Fuel oil fill box shall be manufactured by EBW or approved equal.
- C. Each fill and vent terminal shall be provided with approved identification indicating the tank number with which it is connected.

#### 2.11 CATHODIC PROTECTION FOR THE UNDERGROUND FUEL OIL PIPING

- A. General
  - 1. The cathodic protection system shall meet all applicable standards and particularly the National Association of Corrosion Engineering RP-01-69 (Rev. 76). Submittal drawings, technical data and field survey reports shall be submitted by the contractor to the engineer for approval. Provide all wiring. The cathodic protection system shall provide a flow of direct current from sacrificial anodes to the outer surface of the F.O. piping, the fill piping, and the vent piping. The cathodic protection system shall be designed on the earth resistivity and earth chemical analysis at the proposed depth of the pipe system. The number and size of sacrificial anodes shall be sufficient for a minimum 30 year life. The system shall be Advanced C.P. System Corporation or engineer approved equal.

**B. Soil Resistivity Survey**

1. A soil resistivity survey shall be performed. An average soil resistivity shall be used to calculate the number of anodes required to protect the conduits for 20 years.

**C. Installation**

1. An underground oil piping shall be wirebrushed and coated with two layers of Bitumastic #50 or equal.
2. The anodes are to be installed to provide a minimum of thirty years useful life.
3. All thermoweld connections of anode wires or test station wires shall be checked to insure that the connection is firmly made. Any remaining slag should be removed, wirebrushed and the area recoated with Bitumastic #50 or equal.
4. Suitable dielectric gaskets, sleeves and washers are also provided to isolate all new piping systems as required by the specifications.
5. Anodes shall be located 2'-3' away from the pipe to be protected and approximately level with the bottom portion of the pipe.
6. All wires shall be protected from breaking during the backfilling operation. In addition, all backfill shall be free of rocks, stones or other foreign objects which might damage the anodes, wires or pipe coating.
7. Before backfilling, each anode shall be wet with approximately 5 gallons of clean water to insure prompt activation of the anode. Rain or ground water in the ditch will also suffice for this purpose.
8. All anodes and test stations shall be checked after installation by the contractor's corrosion specialist engineer.
9. Upon completions of backfilling, the corrosion specialist engineer will check the pipe/soil and anode potentials and current output. This data will be presented in the final report.

**D. Test Stations**

1. Test stations shall be provided for each piping run. Test stations shall have a minimum of 1'-6" of slack lead wire. Test leads shall be housed in electrical conduit and terminated in waterproof junction boxes fastened to a building or other accessible structure.

**E. Final Report**

1. The system shall be tested by corrosion specialist after installation has been completed and backfilled, and a report submitted to the engineer. The soil resistivity survey pipe-to-soil readings and anode current output shall be included in the report.
2. The system under this section of the specifications shall be guaranteed for a period of one year from date of acceptance thereof. Upon receipt of notice of failure of any part of the system, during the guaranty period, the affected part or parts shall be replaced promptly with new parts by and at the expense of the contractor.

## 2.12 FUEL OIL TANK INFORMATION PANEL SYSTEM

### A. Level Gauging:

1. Provide and install a Storage Tank Liquid Level Management System. Third party tested 0.1 gph In-Tank and or external 0.2 gph Out-of-Tank Detection capabilities which meet and exceed the current standard EPA required protocols. Console shall include integral printer.

### B. Leak Detection: (Hydrostatic)

1. The tank shall be supplied by the manufacturer with a brine solution in the annular space blended to provide freeze protection to -40°F. In event that the reservoir totally drains, the control panel alarm will be activated - the warning light will illuminate, the alarm horn will sound and the transmission contacts will activate any accessory alarm devices.
2. The alarm horn can be temporarily silenced by pressing the reset button. Under this condition, the "LEAK" light is illuminated. After refilling the reservoir, the "LEAK" light is off and the control panel is restored to the operational mode.

### C. Liquid Head Pressure Monitoring Reservoir:

1. The primary function of a tank monitor is to detect a breach in the inner or outer tank under all circumstances. A pressure type system fulfills this criterion, and a continuous leak detector system, which works on the principle of liquid head pressure, shall be furnished for each tank.
2. In the event of an inner tank leak, the liquid media in the cavity (the space between the two walls of the tank) flows into the inner tank, thereby preventing any stored product from escaping from the inner tank, into the cavity. In event of outer wall breach, system liquid media flows to tank excavation.

## 2.13 CONTROL UNITS

### A. For One or Two Tank Installation - provide and install:

1. Controller: The controller shall be microprocessor-based, and shall be designed and constructed with modular architecture easily permitting either factory or field upgrades and servicing. Configuration and set-up data shall be maintained in non-volatile memory having a minimum fifty (50) year data retention without requiring power of any kind. Replacement or substitution of any controller plug-in card shall not require system re-configuration. Real-time clock and non-critical log data, such as inventory, delivery, alarm, theft, error, and leak reports shall be maintained in battery backed non-volatile memory with a minimum data retention of from (5)-(10) years in the event of a power outage. System shall include digital display for viewing tank information and LED indicators for the alarm conditions.

2. System shall have the capability to continuously monitor up to two (2) dual-float magnetostrictive in-tank level probes and up to eight (8) discrete external leak sensors. The system shall provide hardcopy 24 column environmental compliance reports which exit the front panel or are stored internally with optional autowinder take-up spool. The RS-232 serial port shall be standard for communications with a local PC computer. Optional internal modem shall be available for secure telephone link access to the remotely located PC. Optional Fax/Modem shall be available for secure telephone link access to support class 2 fax transmissions. System shall operate on switch selectable 110/220 VAC(+/- 10%), 50/60 Hz. Maximum power consumption shall be less than 20 watts.
  - a. Console: The console shall be housed in a lockable wall mounted NEMA 4X enclosure. A printer option with autowinder shall be available for the outdoor versions. The console shall include microprocessor board, probe/sensor card, power supply, control I/o and communications interfaces. Front panel display shall include audible and visual alarms, user friendly pushbutton controls, and optional impact printer. The display shall be nine digit, seven segment, quasi-alphanumeric super bright LED type, with LED alarm annunciators for five (5) alarm conditions; leak, three (3) tank product setpoints, and one (1) bottom water setpoint per tank. LED alarm lights shall be visible from at least 60 feet and the seven segment display data shall be readable from no less than twenty (20) feet. Displays shall include product gross or net, percent of capacity, 90% ullage, product and water level, product temperature, and product type. As a standard, two (2) relay outputs and two (2) contact closure inputs shall be provided. Optionally, a modular card containing an additional four (4) relays and four (4) contact closure inputs shall be made available. All relays and inputs shall be user-programmable for activation by following event types; Theft, Power Fail Recovery, System Error, Tank Leak, Product Setpoints, Water Setpoints, External Leak sensors, External Contact closure inputs and Line leak. The system shall be supplied with three industrial quality front panel sealed pushbuttons labeled MODE, TANK SELECT, and TEST. Pushbuttons are utilized in conjunction with the display screen to select tank quantities, view, set, acknowledge alarm conditions; set configuration data, initiate system tests, view inventory and other logged data. The system shall provide hardcopy environmental compliance reports via front panel 24 column printer or with optional autowinder take-up spool. The RS-232 serial port shall be provided as standard for two way communications with a PC computer. Microsoft Windows compatible software shall be provided to retrieve and display current tank statuses, remotely read, write and initialize system setup, clock, and configuration data. An RS-485 port shall be provided as standard for connection to Pneumercator "smart" peripherals, such as remote "slave" display and annunciator panels. The system shall be independently third party certified and have the capability to automatically or manually conduct a static volumetric tank tightness test to an accuracy of 0.2 gph for monthly monitoring and 0.1gph for annual precision testing, with minimum test times of two hours and eight hours respectively. System shall be capable of performing both tests with as little as 20% of tank capacity.

B. Non-Discriminating Type Liquid Sensors

1. Alternate sensors shall be 2-wire type consisting of a magnetic, Buna-N float encased within a 1- 1/8 inch diameter, stainless steel outer housing and supplied with twenty-five (25) feet of 2 conductor #18 AWG gage wire. Sensor shall be rated to 50 PSIG at 160F with an accuracy of 1/2 inch of liquid.

C. Alternate sensors shall be 2-wire type consisting of a horizontal magnetic float encased within a fabricated PVC outer housing and supplied with twenty-five (25) feet of 2 conductor #18 AWG gage wire. Sensor shall pass through a fiberglass double-wall tank annular space tank opening. Sensor shall provide an accuracy of 1/2 inch of liquid.

D. Alternate sensors shall be 3-wire type consisting of a single magnetic float capable of detecting breached inner or outer walls of a double-wall fiberglass tank. The reservoir sensor and its components shall be provided with a non-corroding PVC outer housing, float and guide stem assembly, and sixteen (16) feet of 4 conductor #18 AWG gage wire. Sensor shall mount in a specified manway on top of each tank and rest on the reservoir floor. The Hydrostatic sensor shall detect changes in the reservoir brine or glycol solution when the level drops below 2 inches or rises above 11 inches of liquid.

E. External Active Leak Sensors: Two types of active leak sensors shall be offered. Non-discriminating type shall be eletro-optical technology and shall sense only wet or dry conditions. Discriminating type shall employ both eletro-optical and conductivity technologies for detecting and differentiating between hydrocarbon and water. Sensor assemblies shall be provided with a twenty-five (25) foot, 3-conductor, #22 AWG gage wire cable.

F. Leak sensor shall be (Non-discriminating type)

G. Leak sensor shall be (Discriminating type)

H. Discrete Sensor Fault Output Feature: Optionally, all Pneumercator leak sensors shall be available with a supervised wiring feature to detect Open or Short-circuited conditions in the sensor field wiring. Active sensor types shall additionally incorporate automatic detection and reporting of sensor internal faults.

1. Leak sensor shall be:

- a. EG: LS600-LD-BNF

- b. ES825-200F

I. Overfill prevention shall be provided as follows:

1. Alternate External Remote Audible/ Visual Annunciator: Alarm Console shall consist of two items; a solid state electronic wall mounted NEMA 4X weatherproof enclosure housing Strobe/Siren combination(RA200) and separate A/C power module and wiring junction box. The audible annunciator shall have a minimum rating of 101db at ten (10) feet. The visual annunciator shall be Xenon strobe type with a minimum rating of fifteen (15) candela.



2. Multiple RA200 annunciators shall have the capability of being connected in a daisy chain or parallel configuration. The RA200 shall monitor status of TMS3000 console alarms. The RS-2 Test/Reset remote switch assembly shall also be available in a NEMA 4X enclosure to be used in conjunction with the RA 200 annunciator. The RS-2 shall be supplied in a separate housing, permitting the RA200 annunciator to be mounted with an optimal mounting height for maximum visual and audible range. Acknowledging alarms shall only silence the horn, leaving alarm light lit until condition is corrected. The Test button shall be provided to verify operation of both the audible and visual alarms. System shall operate on switch selectable 110/220VAC(+/- 10%), 50/60 Hz line voltage. Maximum power consumption shall be less than 5 watts.
3. External Remote Annunciator
4. External Remote Test/Reset Switch Assembly

#### 2.14 FUEL INFORMATION CABINET SYSTEM TECHNICAL SYSTEMS

- A. Major elements of the Fuel Tank Information Cabinet System shall be furnished by a single source vendor to assure design, installation, and service interface, and to provide in-warranty and post-warranty unified responsibility for training of personnel, and supply of replacement parts to the City of New York and Commissioner.
- B. System vendor shall coordinate product data presented by Fuel Tank Information Cabinet System manufacturer and fuel storage tank manufacturer to provide a comprehensive set of interfaced drawings which will serve as the basis for system evaluation by consulting engineer, and installation by trade contractor designated by the City of New York.
- C. Fuel Tank Information Cabinet System vendor service organization shall employ senior service technicians, having experience in all aspects of trouble shooting, corrective service and preventive maintenance.

#### 2.15 FUEL OIL ABOVE GROUND TANK(S): (Keener and HELP SEC Buildings)

- A. Furnish and install cylindrical fuel oil storage tanks of dimensions as follows on the drawings. (Each) tank shall be fabricated from best quality "tank steel" sheets, free from liminations, cracks, mill scale, rust, etc. Tank(s) shall be welded throughout. Oil storage tanks shall be delivered to the job as soon as the job conditions permit.
- B. The tanks shall be constructed, tested and installed in accordance with NFPA recommendations and shall be furnished with Underwriters' label.
  1. The tank manufacturers statement that this tank conforms with 6 NYCRR part 614 New York State Dept. of Environmental Conservation must be permanently displayed.
- C. Openings - Provide all openings, located on top of shell of each tank. Size of opening for each pipe connection shall be the size of pipe connected. Manhole shall have a 3/8-inch thick or heavier steel cover plate with two (2) 1/2-inch diameter steel lift handles welded to plate and shall be provided with approved heavy ring gasket, etc. Cover plate and gasket shall be secured by (24) 5/8-inch diameter brass bolts and nuts. All couplings for pipe connections shall be continuously welded inside and outside of tank and plates. Manholes shall be 24" diameter.

- D. Ladder - From the manhole opening to the bottom of tank, provide a ladder having 3/8 x 2-1/2-inch bar steel sides not less than 16-inches apart and 3/4-inch diameter steel rod rungs spaced on about 12-inch centers. Rungs shall go through the sides and be welded in place. Ladder shall be properly fastened to tank with angles, etc.
- E. Coating - The entire exterior of the tank is to be thoroughly cleaned in accordance with specification. SSPC6 for commercial sandblasting. They, by spraying, rooling or brushing, a steel tank institute approved coating is to be applied to the entire exterior of the tank of a minimum dry film thickness of 10 mils on the shell and 15 mils on the heads.
- F. Affidavit - An affidavit stating that the thickness of steel, inside and outside welding and coating of tanks have fully complied with the specified requirements, shall be obtained from the manufacturer and delivered to the Commissioner.
- G. Identification - Each tank shall be provided with an approved type and size number plate indicating the tank number and attached to tank at a conveniently visible location in the access space.
- H. Test - Each tank shall be pressure tested at seven pounds per square inch pressure or greater if required by local code. Tests shall be made in the presence of authorized representatives of the Commissioner.
- I. Furnish and install where directed two (2) charts for determining the amount of oil in tank when measured with a rod. Furnish one (1) rod.

#### 2.16 FUEL OIL ABOVE GROUND STORAGE TANK (CLARK BUILDING)

- A. FIELD ERECT on the JOB, One (1) Rectangular, jobsite fabricated and tested above ground single wall steel fuel oil storage tank. Tank to be 6,000- gallons capacity. Tank dimensions: 24'-0" L x 7'-0" W x 5'-0"H. Refer to mechanical drawings for tank details. Tank shall be suitable for containing heating fuel oil No. 2.. Tank to be as manufactured field erected by Analytical & Combustion Systems, Highland Tank or approved equal.
- B. Welding work in occupied building should be done in accordance with the OSHA regulations with participations and under supervision of fire safety personal of the building. All requirements for additional temporary ventilation shall be accommodated without additional expense to the City of New York.
- C. Rectangular tanks exceeding 275 gallons (1041 L) capacity shall comply with Additional construction requirements per NYC Mechanical Code Section 1305.14.3.1 through 1305.14.3.6:
  - 1. 1305.14.3.1 Thickness: Plates for rectangular tanks of more than 275 gallon (1040 L) capacity shall be at least 5/16 inches (7.9mm) thick.
  - 2. 1305.14.3.2 Corners: Corners may be made up by bending the plates or by using angles.
  - 3. 1305.14.3.3 Seams: All tanks shall have full penetration 5/16 welds at all seams.
  - 4. 1305.14.3.4 Bracing: All flat surfaces of rectangular tanks shall be braced by structural members or rods.
  - 5. 1305.14.3.5 Structural work: all structural members shall be designed in accordance with the requirements of the New York City Building Code.

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6. 1305.14.3.6 Connections: Connections between bracing members and the sides of the tank shall be designed so that the connections will not fail before the member will fail.
- D. Fill, FOS and FOR will be supplied with drop tubes in the tank to prevent surging or air encapsulation. All fittings should be located on the top of tank.
- E. Tank shall be single wall steel and fabricated in accordance with New York City Building code and New York State Department of Environmental Conservation Standards 6NYCRR Part 613 and 6NYCRR Part 614 for Petroleum Bulk storage latest edition.
- F. Tank shall bear the New York City and New York State labels, which shall:
  1. Certify the tanks conform with 6NYCRR Part 614
  2. The name of the manufacturer and the year of manufacture
  3. The standard of design by which the tank was manufactured
  4. The thickness of the tank plates
  5. Capacity of the tank
  6. Type of petroleum products to be stored, etc.
- G. A second label showing all the above information as well as the date of installation shall be conspicuously displayed and permanently affixed to the fill box.
- H. Tank shall be built from steel plates made by the open hearth process and known as "tank steel". The minimum shell thickness shall be 5/16". All tanks shall be continuously welded inside and outside with either double-welded butt joints or double-welded full fillet lap joint with a minimum overlap of 3/4". Welding shall be in accordance with AWS D1- 1 to provide a watertight tank that will not warp or deform excessively under load.
- I. Aboveground rectangular steel tank shall be fabricated of new carbon steel that shall comply with one of the following classifications:
  1. Comply with Specifications for structural Steel ASTM A 36- 81a.
  2. Specification for steel, Carbon (0.15 maximum percent) Hot-rolled Sheet and Strip, Commercial Quality, Heavy thickness coils (formerly plate) ASTM A635- 81.
  3. Have a carbon content of 0.3% or less, or a carbon equivalent of 0.53% or less and (2) mechanical strength and welding characteristics at least equivalent to one of the steels specified in Item A.
- J. Tank shall have internal stay rods (diameter determined according to tank size/ capacity) fully welded at each wall penetration point. Rods to be mounted every 24" on center; tank side to side, tank end to end and tank top to bottom.
- K. Fittings to be supplied as shown on the drawings and as per jobsite requirements. All fittings to be located centered of cross members. Openings on the tank shall be as shown on detail.
- L. A square striker plate, 1/8" minimum thickness and 12" square shall be installed at the tank invert under each tank fitting, except vent line connection.
- M. Rectangular tank to be mounted and set level on 6" I beams. "I" beams are to be provided by others (Structural). Refer to Structural Engineering drawings for details.

- N. Exterior protective primer coating to be red oxide. Two coats minimum dry thickness of 10 mils on shell, 15 mils on the heads. and heads. Finish coat to be black enamel. The entire exterior of the tank is to thoroughly cleaned
- O. Tank to be hydrostatically tested at 25 PSI in accordance with New York City Building code and Fire Department requirements.
- P. Repair any leaks or defects detected during test procedure and retest.
- Q. Ladder – From the manhole opening to the bottom of the tank, provide a ladder having 3/8" x 2-1/2 inch bar steel sides not less than 16 inches apart and 3/4" inch diameter steel rod rungs spaced on about 12 inch centers. Ladder shall be properly fastened to tank with angles, etc.
- R. Warranty
  - 1. Manufacturer shall furnish to buyer, in writing, a 2-year warranty. Warranty shall cover repair or replacement of tank (s) in the event of failure, through no fault of buyer, due to internal or external corrosion or structural failure for the term of the warranty at the original point of installation, provided that tank (s) are used solely for storage of petroleum products.

### PART 3 - EXECUTION

#### 3.1 CONCRETE BASES

- A. Install concrete bases for fuel oil transfer pumps. Refer to Division 03 Section "Cast-in-Place Concrete."

#### 3.2 SERVICE ENTRANCE PIPING

- A. Extend fuel oil piping and connect to oil distribution system supply piping in the location and of the size indicated for supply entrance to building.

#### 3.3 PIPING APPLICATIONS

- A. General: Flanges, unions, transition and special fittings, and valves with pressure ratings same as or higher than system pressure rating may be used in applications below, except where otherwise indicated.

#### 3.4 VALVE APPLICATIONS

- A. Drawings and specifications indicate valve types used. Where specific types are not indicated, the following requirements apply:
  - 1. Shutoff Duty: Use gate, ball, or butterfly valves.
  - 2. Throttling Duty: Use globe or butterfly valves.

#### 3.5 PIPING INSTALLATIONS

- A. Refer to other sections in Division 23 for additional piping installation requirements.

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- B. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down.
- C. Install strainers on supply side of each control valve, pressure-regulating valve, oil burner connection, and elsewhere as indicated. Install 3/4-inch NPS (DN20) pipe nipple and ball valve in blow-down connection of strainers 2-inch NPS (DN50) and larger. Use same size nipple and valve as blow-off connection of strainer.
- D. Install dielectric fittings (unions and flanges) with ferrous and brass or bronze end connections, separated by insulating material, where piping of dissimilar metals is joined.
- E. Anchor piping to ensure proper direction of piping expansion and contraction. Install expansion joints, expansion loops, and pipe guides as indicated.
- F. Prepare and paint outside of containment conduits with coal-tar epoxy-polyamide paint according to SSPC-Paint 16.

### 3.6 JOINT CONSTRUCTION

- A. Refer to other sections in Division 23 for piping joint construction.

### 3.7 VALVE INSTALLATION

- A. Install shutoff, drain, and check valves as specified and as required.
- B. Provide approved anti-siphon valves at all high points of the suction line.
- C. Install valves in accessible locations, protected from damage. Tag valves with metal tag indicating piping supplied. Attach tag to valve with metal chain.
- D. Install valves at each branch connection to supply mains and elsewhere.
- E. Install drain valves at low points in mains, risers, branch lines, and elsewhere as required for system drainage.

### 3.8 HANGER AND SUPPORT INSTALLATION

- A. Refer to other sections in Division 23 for pipe hanger and support devices.
- B. Support vertical steel pipe at each floor and at spacing not greater than 15 feet (4.5 m).

### 3.9 CONNECTIONS

- A. Install fuel oil piping next to equipment using fuel oil to allow service and maintenance.
- B. Connect fuel oil piping to equipment using fuel oil with shutoff valves and unions. Install valves upstream from equipment. Install union or flanged connection downstream from valves. Include flexible connectors where indicated.

- C. Sediment Traps: Install tee fitting with capped nipple in bottom forming drip, as close as practical to inlet of equipment using fuel oil. Fabricate drip leg with a minimum length of 3 pipe diameters.
- D. Ground equipment.
  - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- E. Electrical Connections: Wiring is specified in Division 26 Sections.

### 3.10 FIELD QUALITY CONTROL

- A. Inspect and test fuel oil piping according to NFPA 30 "Testing" Paragraph and NFPA 31 "Tests of Piping" Paragraph.
- B. Oil suction line piping shall be tested at 25 inch vacuum prior to backfilling. Piping shall be tested at a minimum of 1½ times the design operating pressure (minimum of 225 psig) prior to backfilling. Submit witnessed affidavit to engineer.
- C. Repair leaks and defects with new materials and retest system until satisfactory results are obtained.
- D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Report test results promptly and in writing to Architect.

### 3.11 DEMONSTRATION

- A. Train City of New York maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
- B. Review data in the operation and maintenance manuals.
- C. Schedule training with City of New York with at least 7 days' advance notice.

### 3.12 START-UP

- A. Perform these steps before activating system:
  - 1. Open valves to fully open position and close bypass valves.
  - 2. Remove and clean strainer screens.
  - 3. Fully prime system.
  - 4. Energize pump and check for proper direction of rotation.
  - 5. Check operating controls of fuel burner units.
  - 6. Check operation at automatic bypass valves.

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7. Check prime. Reprime, as required.

END OF SECTION 23 11 13

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## SECTION 23 21 13 - HVAC PIPING

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic mechanical materials and methods to complement other Division 23 sections.
- B. All work associated with piping systems.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Section 23 05 00, Common Work Results for HVAC.
  - 2. Section 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).
  - 3. Section 23 05 50, Basic Mechanical Materials and Methods.
  - 4. This section is a part of each Division 23.

#### 1.3 REFERENCES

- A. ANSI/ASME B31.9 Building Services Piping.
- B. ANSI/ASME B31.1 Power System.

#### 1.4 QUALITY ASSURANCE

- A. Installer. Company specializing in piping systems with three years minimum experience.

#### 1.5 SEISMIC DESIGN

- A. This project is located within a seismic zone requiring special provisions for the support and restraint of equipment, components and piping. See 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design), additional requirements.

#### 1.6 SUBMITTALS

- A. Submit product data under provisions of Section 23 05 00.
- B. Include product description, list of materials for each service, and locations.
- C. Submit manufacturers installation instructions under provision of Section 23 05 00.

**PART 2 – PRODUCTS**

**2.1 MATERIALS FOR PIPE AND FITTINGS**

A. Pipe and fittings shall be fabricated per the following schedule:

<b>PIPE AND FITTING SCHEDULE</b>			
<b>SERVICE</b>	<b>PIPE SIZE</b>	<b>PIPE TYPE</b>	<b>FITTINGS</b>
L.P. Steam (below 15 psi)	2-1/2" and under	Schedule 40, Seamless or ERW, ASTM-A53, Grade B	Malleable iron 150 lbs; cast iron 125 lbs; screwed or socket weld
	3"-10"	Schedule 40, Seamless or ERW	Schedule 40 weld end (butt weld)
	12"-24"	Standard weight (.375" wall) ASTM S-53, Seamless or ERW	Std. Wt. (.375" wall) welded (butt weld)
L.P. condensate return, drips and pumped discharge	2-1/2" and under	Sch. 80, Seamless	Iron class 150 lb. screwed or socket weld
	3"-10"	Sch. 40, Seamless	Sch. 40 weld end (butt weld)
	12"-24"	Std wt. (.375" wall), Seamless	St. wt. (.375" wall) weld end (butt weld)
Domestic Water	3" and under	Copper Type L hard drawn	Wrought or copper with lead free 95/5 solder or brazed.
Vents and Reliefs		Same materials as pipe systems they serve	Same material and fittings as systems they serve.
Fuel Oil Piping See "Fuel Oil Systems"			

**PIPE AND FITTING SCHEDULE NOTES:**

1. Furnace butt weld pipe is not acceptable. All pipe shall be of the domestic manufacture, delivered to the job properly primed and marked and supplied with the interior surfaces clean and rust free. Each end shall be capped to avoid the rusting of the interior surface. Piping found to be in violation of this specification may be required to be removed from the job site whether or not already installed. Mill certifications from the pipe supplier shall be made available upon request.

2. All copper tubing shall be not less than 99.9 percent pure copper, as manufactured by Revere Copper and Brass Co., Chase Brass and Copper Co., Inc. Bridgeport Brass Co., or other approved. Wherever possible, tubing shall be continuous with couplings up to 20 feet in length. Tubing shall conform to ASTM B88.
3. ASME B31.1 Power Piping Code shall apply for all steam condensate systems over 150 psi @ 366°F (and or Local Jurisdictional Codes) and for high temperature hot water systems above 160 psi and 250°F.
4. Any steel pipe not specified in the Schedule, or elsewhere in the construction documents shall be Type A-53 Grade B seamless or ERW.

B. Piping specifications shall be submitted with shop drawings.

C. All pipe fittings shall be of domestic manufacture in conformance with the following codes:

- |                            |                        |
|----------------------------|------------------------|
| 1. Cast iron fittings      | ANSI B16.4             |
| 2. Malleable iron fittings | ANSI B16-3             |
| 3. Weld end fittings       | ANSI B16-9, ASTM A-234 |
| 4. Socket weld fittings    | ANSI B16.11            |
| 5. Copper fittings         | ASTM B-32, ANSI B16.22 |
| 6. Welded flanges          | ASTM-A105; ANSI B16.5  |
| 7. Cast copper             | B16.18                 |
| 8. Threaded Flanges        |                        |
| 9. Cast Iron               | ANSI B16.1             |
| 10. Malleable Iron         | ASTM A197              |
| 11. Malleable Iron Unions  | ASME B16.39            |

D. Galvanized steel pipe shall be hot dipped galvanized of Republic Steel Corporation, National Tube Co., Youngstown, or other approved manufacturer.

## 2.2 VALVES

- A. Furnish and install valves shown on the drawings, specified herein and/or necessary for the control and easy maintenance of all piping and equipment. All valves shall be first quality of approved manufacture, shall have proper clearances, and shall be tight at the specified test pressure. Each valve shall have the maker's name or brand, the figure or list number and guaranteed ANSI working pressure cast on the body and cast or stamped on the bonnet, or shall be provided with other means of easy identification. All valves of one type (gate, ball, and butterfly) shall be the product of one manufacturer for that type of valve.

- B. Valves shall be a minimum working pressure and materials as fittings specified for the service except as herein modified. All gate and globe valves shall be suitable for repacking under pressure. Regardless of service, valves shall not be designated for less than 125 pounds per square inch steam working pressure.
- C. It is the intention to use ball and butterfly valves for shut-off wherever possible. Gate valves shall be used for steam systems where ball and butterfly valves may not be practical by pressure/temperature or local authority having jurisdiction.
- D. The following chart designates valve categories for shut-off valves:

SHUT OFF VALVE SCHEDULE						
	CATEGORY	SIZE	TYPE	MFG. ASSTD.	FIG. #	RATING
V-1	Up to 150 psi HW	2 1/2" & down 3" & up	Ball Butterfly	Apollo Jamesbury	70-100 815L-11-2236TT	600# WOG ANSI 150#
V-3	Steam & Condensate Up to 15 psi	2 1/2" & down 3" & up	Ball Butterfly	Apollo Jamesbury	70-140-64 815L-11-22HBTT	250 psi STM ANSI 150#

**NOTES:**

1. Butterfly valves shall have gear operator 8" diameter and larger for ANSI 150 valves; 6" and larger for ANSI 300 valves. Valves smaller shall have multi-position latching handle.
2. Valves 4" and larger in equipment area which is more than 8'-0" above finished floor shall be provided with operating chains, sprockets, and guides.
3. All ball valves shall have the following options:
  - a. Balancing stop for hydronic installations.
  - b. 2 1/4" stem extensions on insulated piping systems.
  - c. Stainless steel ball and stem, and multi-filled TFE seats for steam, condensate and high temperature hot water systems.
4. Gate valves shall be Stockham, Powell or Milwaukee.
  - a. Bronze valves 3" or smaller shall be inside screw, traveling stem, bronze wedge.
  - b. Iron body valves 3" and above shall be outside screw and yoke, rising stem, bronze mounted.
5. Butterfly valves shall be high performance lug type Jamesbury, Bray/McCannalok, WKM DynaCentric Series or Keystone 362/372 DES series. Valves shall be bi-directional dead end service, lug type ANSI Class 150 or 300.
  - a. The face-to-face dimensions must meet AP Spec I609 MSS SP 67.
  - b. Pressure vessel is to meet full ANSI ratings.

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- c. Valve is to seal bi-directional dead end service at full ANSI ratings. Valve shall hold full pressure with either flanged connection removed, in either direction.
- d. Valves are to be able to take full rated differential pressure when dead-ended in either direction.
- e. Valves shall have gear operator 8" and larger for ANSI 150 valves, and 6" and larger for ANSI 300 valves. Valves smaller shall have multi-positioned latching handle.
- f. All valves shall be designed to ANSI B16.5 and B16.34.
- g. All valves to be functionally tested, to include cycling the valve and topworks, measuring seating torque and verifying leaktight performance of seat.
- h. The valve should be capable of thermal cycling over its complete pressure vessel rating.
- i. The shaft packing must be capable of sealing at 1.5 times the pressure vessel rating.
- j. The valve should be designed to convert from handle operation to automated valve operation without removing the valve from the pipeline.
- k. There must be external indication of disc position.
- l. Valve stem packing area shall be fully accessible for adjustment without removal of operator.
- m. If manually operated, the valve must have a positively retained shaft in case there is a failure of the shaft to disc attachment.
- n. Self-lubricated bearings should be used. There will be a method of retention to prevent bearing movement.
- o. No loose parts should be used to attach the shaft to the disc. Two or more pins should be used for complete attachment.
- p. A double offset shaft should be used to reduce seating torque.
- q. Valves body material shall be carbon steel. Shafts shall be 17-4 PH stainless steel. Discs shall be 316 stainless steel. Stem seals shall be TFE. Seats shall be self-energizing TFE or self-energizing TFE totally encapsulating as elastomeric "O" ring. Metal springs or components shall not be used to and in seat sealing.
- r. Seats shall be fully replaceable in the field.
- s. Ductile iron body may be used for chilled water and condenser water service, at 150 psi max service. All other valve components shall be as specified.

Lubricated plug valves at pump discharges shall be Nordstrom Valves, Inc. (Rockwell), Homestead or Stockham as follows:

CATEGORY	SIZE	FIGURE NO.	RATING
Up to 150 psi operating pressure	Up to 3"	142 wrench operated (screw)	200# cwp (190 # @ 200°F)
	3"-5"	143 wrench operated (screw)	200# cwp (190# @ 200°F)
	6"-12"	1169 worm gear operated (flgd)	200# cwp (190# @ 200°F)
	14"-30"	1169 worm gear operated (flgd)	150# cwp (135# @ 200°F)

**NOTES:**

- Use Figure No. 1589 for systems with operating pressures greater than 135 psi at water temperature above 150°F.
- Use with ANSI 300# flanges.
- Lubricated plug.
- Sealed port lubrication system.
- Provide lubrication gun and spare box of lubricant for every four (4) valves.
- Fixed gland adjustment when valve rating is 200 lb. WOG or higher to suit actual operating pressures.
- Equipped with adjustable stops.
- Factory lubricated.
- Provide chain wheel drive and operator for valves 6" and larger that are located 96" or higher above floor.

**E. Equivalent Lubricated Plug Valves**

PSI	SIZE	MFG	FIGURE NO.	OPERATION
Up to 150 psi	Up to 3"	Walworth	1796 (screw)	Wrench
		Homestead	611 (screw)	Wrench
	3" to 5"	Walworth	1797F (flange)	Wrench
		Homestead	612	Wrench
	6" to 12"	Walworth	1707	Worm Gear Operation
		Homestead	612G	Worm Gear Operation
	14" to 24"	Walworth	1703F	Worm Gear Operation 175 CWP
		Homestead	6129	Worm Gear 150 CWP

F. Check valves other than multiport check valves at pumps shall be Stockham, Powell or approved equal. Bronze screwed for 2-1/2" and down with regrinding bronze disc and iron body above 3" with regrind - renew bronze disc, and seat ring with bolted cover. Pressure ratings equal or greater than ratings of shutoff valves scheduled.

Category	Size	MFG	Figure No.	Rating
V-1	Up to 2-1/2"	Powell Stockham Milwaukee	578 B321 509	Up to 150 PSI operating pressure
	3"	Powell Stockham Milwaukee	559 G-931 F-2974M	

- G. Multiport check valves at pump discharge shall be semi-steel installed at pump discharge as follows:

Cat.	Size	MFG	Figure No.	Rating
V-1	Up to 3"4" and larger	Mueller Mueller	101 MAP Wafer105 MAP Globe Type	125# ANSI (175@100°F) 125# ANSI (200#@150°F)

- H. Balancing Valves:

- Balancing valves shall be ball type for 2-1/2" and down, lubricated plug valves for above 3", and shall be full line size. At cooling towers use butterfly valves.
- Furnish and install in the return line from each piece of hydronic equipment a one piece, non-ferrous union type bronze/brass flow measuring and Balancing/shut-off valve combination. The flow element shall be a low loss/high signal Venturi type ( $\pm$  2% accuracy) of one to ten rangeability, equipped with dual Pete's plug test ports for temperature, pressure and flow measurement. Balancing/shut off valves shall be ball type with large diameter plated ball, teflon seats, blow out proof stem with teflon packing and packing nut, full size handle with grip and memory stop. Entire assembly shall be rated to working pressures described in previous section of this specification.

- I. Triple Duty Valves:

- Furnish and install as shown on plans, a triple duty valve designed to perform the functions of a center guided nonslam check valve, shutoff valve and calibrated balancing valve.
- The valve shall be of heavy duty cast iron construction meeting ANSI requirements. The valve shall be fitted with a bronze seat, replaceable bronze disc with stainless steel stem and chatter preventing stainless steel spring. The valve design shall permit repacking under full system pressure.
- Cv rating shall be provided at every 10% increment opening for the straight and angle valve. Manufacturer shall supply the Cv rating for the read-out of flow determination and system pressure drop.
- The valve shall be equipped with brass readout valves (with integral check valve) to facilitate taking differential pressure readings across the orifice for accurate system balance. Provide calibrated nameplate and memory button. The valve shall be produced at an ISO 9001 approved facility.
- The valve shall be ITT Bell and Gossett Model No. 3D triple duty valve or approved equal from specified manufacturers.

- J. Miscellaneous Notes:

- Furnish valve tags as described elsewhere.
- All hydronic equipment, shall be individually valved on supply and return.
- Furnish a portable meter complete with all accessories for measuring flows.
- Furnish to the City of New York, 6 sets of thermometers and pressure gauges.

5. On branch piping from hydronic main distribution piping (branch piping is defined as any piping from either main distribution piping that serves more than one piece of hydronic equipment) or branch piping from main distribution piping to vertical risers, provide an isolation valve on supply line and combination balancing and shut-off valve on return line.
6. Globe valves shall be of equivalent pressure ratings and manufacturer to that stated for gate valves.
7. Inverted ball float traps shall be used for venting water mains. Provide shut-off valve and strainer ahead of same.
8. Compression type, key operated air cocks shall be furnished and installed where required for additional venting. Cocks shall be 1/4" in size and shall be all bronze construction, at least two dozen keys shall be delivered to the Commissioner for operating these cocks.
9. Drain cocks with threaded ends for hose connection shall be provided for any low points in the risers.

### 2.3 STRAINERS

- A. There shall be approved strainers in the inlet connections to each bucket or combination float and thermostatic steam trap, each water feeder and make-up connection, each water regulating valve, each pump, each vent, and each diaphragm valve. The intention is to protect by strainers, all apparatus of an automatic character whose proper functioning would be interfered with by dirt on that seat, or by scoring of the seat. Strainers shall be Sarco or approved.
- B. All strainers in waterlines (including all pump inlets) and in steam lines, shall be Y-pattern, set in a horizontal (or vertical downward) run of the pipe. Where this is not feasible strainers may be of enlarged-cross-section type. Strainers shall be so arranged as not to "trap" pipes, and to facilitate disconnection and opening-up for cleaning. Unless otherwise indicated, strainers shall be line size.
- C. All strainers shall have cast iron, semi-steel or bronze bodies equivalent to ratings specified in "valves" subjected, removable cylindrical or conical screens of monel or stainless steel and suitable flanges or tapings to connect with the piping they serve. They shall be of such a design as to allow blowing out of accumulated dirt, and to facilitate removal and replacement of a strainer screen, without disconnections of the main piping.
- D. Strainer screen perforations shall be 1/32" for steam and mixture of steam and condensate. Water 1/16" perforations for sizes up to 3"; 1/8" perforations for sizes 4" to 12".
- E. Provide approved valved and capped dirt blow off connections for each strainer 1-1/2" and larger, with the valve located 6" to 1'-0" below strainer or as directed.
- F. Nipples and valves to be full size of strainer blow off tapping. Strainers 1 1/4" and smaller to have capped nipples at least 6" long. For all strainers, the blow out connection is to terminate in an approved manner, at a point where there will be no risk of flooding or damage.
- G. All strainers shall be provided with flanged covers for screen removal in lieu of screwed covers for screen removal wherever obtainable.



- H. All strainer screens 8" and above shall be reinforced for the operating conditions.

#### 2.4 EXPANSION JOINTS & LOOPS

- A. All piping shall be installed in such a manner as to allow for expansion and contraction by means of offsets, pipe loops or expansion joints without causing undue stress in piping or at connections to equipment. Where pipe offsets or loops are not detailed or dimensioned on drawings, the contractor is to submit calculations to show that the stress range of the pipe does not exceed 15000 psi. In addition, Contractor shall submit anchoring loads.
  - 1. Where the system is detailed on the documents and the contractor proposes an alternate system or design, the contractor shall submit calculations (sealed and signed by a licensed Professional Engineer) for review.
- B. Expansion joints shall be the type, manufacturer and model number as indicated on drawings. Where no type or model number is indicated, any of the expansion joints described below may be used if they are suitable for design and operating conditions of temperature pressure and movement except that Bellow Expansion Joints and Expansion Compensators shall not be used for (a) steam with pressures over 15 psig for all sizes or (b) hydronic systems operating over 200 psig operating pressure in all sizes.
- C. All expansion joints shall be designed so that pressure containing components are in accordance with requirements as specified in ANSI B-31.1 Power Piping.
- D. All expansion joints and expansion compensators shall have a metal nameplate permanently attached bearing inscription of size, type, pressure rating, allowable movement, year of fabrication and manufacturers identification number.
- E. All pipe lines containing expansion joints shall be guided in accordance with expansion joint manufacturers instructions as substantiated by data in manufacturers catalog or separate data furnished with submittal drawings.
- F. Contractor, in conjunction with information provided by expansion joint manufacturer is to submit anchor load calculations for both operating and hydrostatic test conditions.
- G. Packed Slip Expansion Joints:
  - 1. Packed slip expansion joints shall be weld end type designed for the injection of semi-plastic packing under full line pressure and shall be the manufacturer and model number indicated on drawings incorporating following:
    - a. Sliding slip shall be constructed of A53 Gr B seamless pipe - schedule 80 for sizes to 16" inclusive and schedule 60 for sizes 18" to 24" and shall incorporate stainless steel stops welded in place to prevent disengagement of slip in event of anchor failure. Slip shall be dual chrome plated with a minimum of 1 mil hard chrome over 1 mil of crack free hard chrome. Plating thickness shall be verified by Permascope inspection in accordance with ASTM Standard B-499 and certification shall be furnished with expansion joint.

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- b. Traverse chamber shall be seamless A-53 Grade B pipe or equivalent tubing with butt type circumferential welds only and shall be furnished with non-metallic flexible bronze filled teflon internal and external guides to prevent scoring or binding of sliding slip.
  - c. Stuffing box shall be designed to provide an area of packing in contact with the sliding slip at least 15 times the nominal pipe diameter and shall incorporate one (1) packing cylinder for 1-1/2" thru 4" size and one (1) additional cylinder for each 3" of nominal pipe diameter. Packing cylinders shall be welded in place, be a minimum 2" diameter with internal acme threads with a discharge tip having a check valve effect to prevent blow back and permit adding packing under full line pressure and furnished with a matching plunger having a minimum 3/4" diameter tip. Expansion joints operating over 200 psig shall be furnished with packing cylinders having an integral stainless steel plug type safety valve for positive blow back protection.
  - d. Stuffing box shall be packed with a combination of self lubricating teflon/graphite braided packing and flake Grafoil injectable packing. Teflon-asbestos and teflon semi-plastic injectable packings are not acceptable and shall not be used.
  - e. Each expansion joint shall be furnished with a minimum of two (2) plugs of spare flake Grafoil semiplastic injectable packing for each packing cylinder. For system operating over 200 psig where expansion joints are furnished with packing cylinders having an integral stainless steel plug type safety valve, a tools shall be furnished to safely remove under full line pressure the impacted packing between safety valve and discharge tip. Where project contains more than one (1) expansion joint operating above 200 psig, a minimum of one (1) such tools shall be furnished for every five (5) expansion joints operating above 200 psig.
  - f. Expansion joints shall be as manufactured by Advanced Thermal Systems and shall be Type TP2W GBZ for 150 psig design condition and TP2W-131-150 GBBZ with Style GB Saf-T-Packer for over 150 psig design conditions. For expansion joints operating below 200°F, Style 200G packing with rubber and fiberglass sealing rings shall be used in lieu of Style 150 packing. Expansion joints as manufactured by Adsco and Yarway will be approved if they conform to all features specified above.
  - g. Packed joints used for steam over 15 psig shall be 100% radiographed at factory.
2. Expansion joints shall be designed to accommodate an amount of traverse as shown in expansion joint designation as indicated on drawings or a total traverse greater than the combined extension and compression that must be accommodated after the expansion joint is installed including allowance for frame shortening in buildings with concrete columns. Submittal drawings are to indicate amount of factory precompression as well as available movement in compression and extension from the installed position.

**2.5 HANGERS, SUPPORTS, ANCHORS, AND GUIDES**

- A. Anchors shall be designed to accommodate seismic forces plus any forces imposed by expansion joints or pipe bends and loops. Loads and details of attachment to structure shall be submitted to structural engineer for coordination and review.
- B. In all cases, attachments to structure shall be review by the Structural Engineer. Loads and details of attachment to structure shall be submitted to structural engineer for coordination and approval.
- C. All required supports, hangers, anchors, and guides shall be provided and installed by this contractor. Shop drawings shall be submitted indicating the following.
- D. All pipe supports shall be of type and arrangement as shown on "Pipe Hanger and Support Schedule" on drawings and hereinafter specified. They shall be so arranged as to prevent excessive deflection and avoid excessive bending stresses between supports.
- E. All bracket clamp and rod sizes indicated in this specification are minimum sizes only. This trade shall be responsible for structural integrity of all supports. All structural hanging materials except variable spring units shall have a safety factor of 5 built in.
- F. Pipe supports shall be of the following type and figure number as manufactured by C & P, F & M, Grinnell, or as approved. Figure numbers of hangers or supports not shown shall be subject to approval.

<b>Pipe Hanger Schedule</b>			
	<b>C&amp;P</b>	<b>F&amp;M</b>	<b>Grinnell</b>
Beam Clamp	268	282	--
Clevis Hanger	100	239	260
Clevis Roller Hanger	140	272	181
Welded Steel Bracket	84	151 or 155	195 or 199
Welded Beam Attachment	113A	-	66
Insert	266	-	280
Continuous Slotted Insert	1480	190	--
Metal Deck Ceiling Bolt	143		

- G. Anchor points as shown on drawings or as required shall be located and constructed to permit the piping system to take up its expansion and contraction freely in opposite directions away from the anchored points.

- H. Guide points for expansion joints shall be located and constructed wherever required or shown on drawings and at each side of an expansion joint or loop, to permit only free axial movement in piping systems but first guides shall not be further than 3 pipe diameters on each side of joint and second guides (and subsequent guides) shall be placed no further than 17 pipe diameters along length of pipe. Guides for pipe with expansion joints shall be of the four roller heavy duty type securely welded to structural steel.
- I. Guides shall be of sufficient length to contain a pipe movement 30% greater than actual pipe movement.
- J. Variable spring hangers shall be located and constructed for points subject to vertical movement.
- K. Maximum spacing between pipe supports, for steel pipe to prevent excessive stress: This does not apply where there are concentrated loads between supports.

Pipe Size	Max. Span/Ft.	Pipe Size	Max. Span/Ft.
1/2"	5	4"	14
3/4"	6	5"	16
1"	7	6"	17
1 1/2"	9	8"	19
2"	10	10"	22
2 1/2"	11	12" over	23
3"	12		

- L. Maximum weights on hanger rods assuming a maximum operating temperature of 450°F shall be such that stress in tension shall not exceed 9000 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 2-1/2" to 3-1/2", 5/8" for pipe 4" to 5", 3/4" for pipe 6", 7/8" for pipe 8" to 12".
- M. Double bolt riser clamps shall be F&S, F&M, Grinnell or approved and shall be subject to approval.
- N. Pipe supports at the base of a vertical riser shall be pipe riser size.
- O. For copper tubing, supports shall follow schedule and specifications. Supports for uncovered lines shall be especially designed for copper tubing, and shall be of exact O.D. diameter of tubing and shall be copper plated.
- P. Roller type supports shall be used for pipes subject to axial movement. They shall be braced so that movement occurs in roller rather than support rods.
- Q. Provide shields at hangers for cold insulated piping and saddles welded to pipe at hangers for hot insulated piping.

- R. Provide all steel required for support of pipes and equipment other than steel shown on structural engineer's drawings. Submit calculations of anchor design.
- S. All hangers on piping including clevis hangers, rods, inserts, clamps, stanchions, brackets, shall be dipped in Zinc Chromate Primer before installation.
- T. All pipe supports shall be designed to avoid interferences with other piping, hangers, electrical conduits and supports, building structures and equipment.
- U. Pipe hangers shall be connected to building structure as follows:

Building Structure Type	Pipe Support Method
Poured concrete floor slabs.	Galvanized steel inserts and/or fishplates of sufficient area to support twice the calculated dead load.

## 2.6 STEAM SPECIALTIES

- A. Provide steam traps, Armstrong, Spirax-Sarco or approved equal, for venting and draining of steam condensate. Locate at ends of mains, bottom of risers, outlet of steam equipment, and all other points where condensate and air may collect, every 200 feet or less. Traps shall pass condensate and air automatically without passing steam. Test in factory to insure operation. Provide strainer at inlet to each trap.
- B. Size trap capacities for 200% of steam loads at a maximum drop of 1/2 psi. Trap capacity should be rated in general accordance with ANCI PTC 39.1 or FCI 87-1. Traps shall be sized with condensate at steam temperature.
- C. Thermostatic traps shall be of the corrugated bellows balanced pressure type, bellows of red brass or phosphor bronze.
- D. Traps up to and including 2-1/2" shall have flanged or threaded connections. Traps 1" and less shall have union connections.
- E. Each steam heating unit, regardless of type, shall be installed with shut-off valve at inlet. Each radiator or convactor shall have at its supply inlet, a bronze body valve of packless quick-opening type which shall pass sufficient steam when fully opened to fully heat the radiator surface with the lowest pressure carried in the mains.
- F. For each system with 100% outside air provide a thermal drain on each float and thermostatic trap set to open when condensate in trap drops below 75°F. Drain shall be Spirax-Sarco "Thermoton" or approved.
- G. Low Pressure Thermostatic Traps (0 PSI - 15 PSI)
  - 1. Low pressure (0-15 psi) Thermostatic traps are to have cast or forged brass bodies suitable for 125 psi pressure and shall be provided with a union connection at the inlet. Self-aligning valve heads and seats for the low pressure traps shall be of suitable, non-corrosive material. Seats shall be removable, similar to Spirax-Sarco Type T or approved equal.

H. Low Pressure Combination Float & Thermostatic Traps (0 PSI - 15 PSI)

1. Combination Float and Thermostatic Traps shall have a valve mechanism, the position of which is controlled by a closed, stainless steel ball float. The seat of the valve will be watertight at all times. The action of this type of trap must discharge the condensate as soon as it enters the trap and its rate of discharge must be proportionate to the rate of the flow of condensate to the trap.
2. The traps shall be provided with an automatic, thermostatic air by-pass of the balanced pressure, multiple bellows types, or diaphragm capsule.
3. All working parts shall be of non-corrosive metal, (hard bronze, monel or stainless steel) and shall be removable without disconnecting the piping. Floats to be of stainless steel. Valve heads and seats are to be of stainless steel.
4. Body and cover to be of high grade cast iron suitable for 125 psi pressure for a 0-15 psi line, similar to Spirax-Sarco FT-15, or Armstrong Series "B."

I. Schedule of Steam Trap Types

Drips for 0 to 30 psig mains and risers:	FT
Drips for mains and risers over 30 psig:	TD
Radiators, convectors, fin-tube radiators:	T
Air heating, blast coils, preheaters and reheaters:	FT
Hot water heaters:	FT
Tank heaters:	FT
Unit heaters:	FT
Flash tank discharge:	F
Heat exchangers:	FT
Absorption refrigeration machine:	FTB

Code:

FT	-	Float and Thermostatic Trap
TD	-	Thermo-Dynamic Trap
T	-	Thermostatic Trap
FTB	-	Float and Thermostatic Trap (high capacity)
IB	-	Inverted Bucket
F	-	Float Trap

## 2.7 EXPANSION & COMPRESSION TANKS

- A. One or more tanks as required shall be provided for each water system and shall be of the sizes noted on the drawings. Expansion tanks shall be constructed of steel, welded, in accordance with the ASME Code for Unfired Pressure Vessels for a working pressure of 125 psig or 150 percent of maximum operating pressure, whichever is greater. Tanks shall be installed horizontally or vertically as shown on drawings.
- B. Each expansion tank shall be piped and fitted in accordance with standard details.
- C. Tanks shall be provided with cast iron or steel saddles and structural steel supports from floor except that tanks may be supported from the ceiling structure when load points are detailed on structural drawings. Horizontal tanks of not over 250-gallon capacity may be supported from the ceiling by means of solid steel straps, secured as required for pipe hangers. 80-gallon capacity or smaller tanks may also be supported on cast iron or steel brackets properly secured to walls or columns.
- D. Compression tanks shall have one or more ASME rated pressure relief valves set 10% above system working pressure.

## 2.8 THERMOMETERS AND PRESSURE GAUGES

- A. Furnish and install pipe thermometers with separable sockets in the following locations. This applies to all systems described in the specification. Thermometers to be rated at minimum range 150% and maximum 200% of working temperature.
- B. Furnish and install pressure gauges in the following locations on water lines:
- C. Thermometers for water systems shall be direct red reading, 9" vertical scale, 1 degree increments, manufactured by Weksler, Moeller, or Taylor and shall be minimum 4-1/2 inch dial type, aluminum flangeless case.
  - 1. Pipe insertion dial thermometers shall have separable sockets of a material suitable for each given installation. Sockets for insulated lines shall have 2-1/2" extension necks.
  - 2. They shall be of the adjustable angle type to permit easy adjustment of the thermometer case, to facilitate reading after installation.
- D. Pressure gauges shall have 4-1/2" diameter dials, cast aluminum case, wide phosphor bronze bourdon, stainless steel movement, micrometer adjustment pointer, 1/2 of 1% accuracy, ranges as required. Shut-off cock shall be provided between each gauge and piping to permit removing gauge while system is under pressure. All gauges on steam piping shall be provided with syphons. All gauges on pumps shall be provided with pressure snubbers. Gauges as specified above shall be TRERICE 500X series, WEKSLER AAI series, WEISS PG series, ASCHROFT Duragauge series, or approved equal. Mount gauges so that they are clearly visible from floor level. Provide extension tubing as required.

2.9 UNDERGROUND STEEL CONDUIT (Keener and HELP SEC Buildings only)

A. Conduit:

1. All conduit straight lengths shall be welded smooth wall of not less than 10 gauge wall thickness black steel for all sizes and shall be tested at the factory to insure air and watertight welds prior to any fabrication or application of resin coatings. Conduit surfaces, inside and outside, shall be cleaned and made free of all loose scale and mill coatings by sand blasting to clean bright metal, and care shall be taken to maintain the surfaces free of oil and grease, before application of coatings. After sandblasting, the conduit surfaces, inside and outside, shall be given a prime coat of epoxy resin modified for the purpose intended and in preparation for the finish coats. Finish coat of epoxy resin on interior surface shall be applied in one pass to effect a final minimum coating thickness of not less than 6 mils. Exterior finish coat shall be applied to a minimum thickness of 20 mils by the additional application of two alternately applied layers of glass cloth and in such a manner as to fully impregnate each layer with resin as the layers are applied.
2. All primer coats and finish coats shall be of the catalytic epoxy type, unmodified except for necessary dispersants and flow control agents, total modification not to exceed five percent of the vehicle solids. No modification or substitution of additional coatings of other types is permissible. The iron-oxide-zinc chromate catalyzed primer shall contain not less than 60 per cent solids after mixing the two components but before reduction. Of these solids the iron oxide pigment shall be 1.50 - 2.00 pounds per gallon and shall contain not less than 75 percent ferric oxide. The zinc chromate shall be .50 pounds per gallon minimum and the magnesium silicate 1.5 to 2.0 pounds per gallon. The vehicle portion of the primer shall consist of 65 percent epoxy resins (Shell 1001) and 35 per cent resinous curing agent with no more than 5 per cent of the vehicle as stabilizer and flow control agents.
3. The finish coat shall contain not less than 60 percent solids after mixing the two components but before reduction. The pigment shall consist of 2 pounds per gallon of chromium oxide with the addition of not more than 3 percent of the pigment as dispersants and suspending agents. The finish coat vehicle shall consist of (Shell 1001) epoxy resin and a resinous Nitrogen containing curing agent in the ratio of 65 per cent epoxy resin to 35 per cent curing agent with the addition of not more than 5 per cent of stabilizers and flow control agents.
4. Final outside coating shall be subjected to a spark test and be capable of maintaining dielectric strength of 10,000 volts.
5. Conduit closures of suitable length complete with pipe insulation shall be furnished by the system manufacturer and shall be cylindrical in form of 10 gauge steel with a single horizontal side split. Closures shall be supplied with necessary prime coating and one finish coat, inside and outside, of epoxy resin same as conduit.
6. Installation of closures shall occur in the field by the Contractor at points of field joints between straight units or fabricated fittings, and shall be welded centrally over conduit ends between such adjacent units.



7. After welding a pressure testing using 15 lbs. air shall be made, and all welds shall be examined and checked for leaks by applying a soapy solution to the weld area. Any leaks shall be rewelded and the system retested until airtight at 15 lbs. pressure.
8. The Contractor shall furnish all necessary equipment and labor to perform the air test, including air compressor, gauges, conduit caps, temporary pipe and connections, etc., and complete the test to the satisfaction of the architect and/or engineer.
9. Upon completion of test and as soon thereafter as possible, all field welds on closures shall be cleaned of all welding slag, burned coating, mud, etc., by wire brushing.
10. Coupler shall then be finish coated in accordance with the system manufacturer's instructions, using materials supplied.
11. Finished coating shall then be spark tested as hereinbefore specified for straight units.
12. Additional conduit accessories as hereinafter specified shall have all exposed surfaces coated with resin same as conduit.
13. The whole system, prior to backfill, shall be subjected to a final spark test, and any electrical leaks caused by scuffing or other physical damage to coating shall be made good.

**B. Pipe and Pipe Supports**

1. All piping in conduit shall be as specified for the service required. All field pipe joints shall be welded by competent mechanics and hammer tested under hydrostatic pressure of 250 psi or twice the working pressure, whichever is greater, unless otherwise specified. Concealed pipe welds in fabricated conduit fittings shall be factory tested the same as specified for field welds, prior to assembly.
2. Piping shall be suitably spaced in the conduit and shall be supported in such a manner to avoid stress on wear on the pipe and/or insulation. Pipe supports shall consist of full, round insulating discs with specially corrugated steel band outer periphery to allow free air passage within the casing from one side to the other and to afford minimum line contact with inner surface of conduit. Supports shall be spaced on not more than 10'-0" centers with metal surfaces of supports protected with epoxy resin coating same as for conduit.

**C. Expansion Loops, Ells and Tees**

1. Prefabricated ells, loops and tees shall be furnished and installed where shown on plans and shall consist of pipe, insulation, and conduit conforming to the same specification as hereinbefore specified for straight runs. Expansion loops shall be of proper design in accordance with stress limits indicated by A.S.M.E. Loop piping shall be installed in conduit suitably sized to handle pipe movement.

**D. End and Gland Seals**

1. Terminal ends of conduits inside manholes, pits or building walls shall be equipped with end seals consisting of a steel bulk head plate welded to the pipe and conduit. Where there is no anchor within five feet of a terminal end, conduits shall be equipped with gland seals consisting of a packed stuffing box and gland follower mounted on a steel plate welded to end of conduit. End seals or gland seals shall be equipped with drain and vent openings located diametrically opposite on the vertical center line of the mounting plate and shall be shipped to the job site with plugs in place.

**E. Waterstops or Leakplates**

1. All conduits shall terminate 1" beyond inside face of manhole or building walls to prevent condensation drip from spilling over exposed piping insulation in pits. Conduit shall be equipped with leak plates or water stops located in wall approximately 5" from terminal ends to provide effective moisture barrier.

**F. Anchors**

1. Prefabricated plate anchors shall be furnished and installed where shown on plans and shall consist of a steel plate, welded to pipe and conduit. The steel plate shall be 3/8" thick for 6" to 10" conduit, 2" thick for 11-1/8" to 20" conduit and 3/4" thick for conduit over 20".
2. A concrete block shall be cast over the plate and conduit and shall be large enough for firm anchorage into undisturbed trench sidewalls. The concrete block to be at least 30" in length and extend a minimum of 9" beyond the top and bottom of anchor plate.

**G. Pipe Insulation**

1. All pipe or pipes in conduit, as hereinafter specified, shall be insulated with machine-molded 1-1/2" fiberglass cloth jacket. Side joints of insulation jackets shall be double stitch sewn with fiberglass thread and with end joints telescoped not less than 2 inches when applied. For chilled water piping, refer to insulation section.
2. The factory prefabricated insulated pipe conduit specified above shall be Imperial Line as supplied by Ric-Wil Incorporated, Barberton, Ohio, or equal, and installed under the supervision of a factory installation supervisor.

**H. Cathodic Protection**

1. Cathodic protection shall be provided for the buried systems furnished under these specifications.
2. The cathodic protection system consists of furnishing the design and materials, and performing all operations necessary to provide a flow of direct current from sacrificial anodes to the underground heating and cooling distribution systems.

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3. The manufacturer of the heating conduit system shall be responsible for furnishing the design and materials for the cathodic protection of their particular system.
4. The system shall be designed with not less than 7% of the heating conduit surface considered bare and not less than 2 milliamps of current per square foot of bare surface. Seventeen pound magnesium anodes shall be used, sufficient for a 30 year life.
5. Test stations shall be provided along the conduit, not more than 500 feet apart, to test performance after installation. Terminate test leads at ground surface in a cast-iron housing encased in concrete, with approximately 18" of slack lead. Where buildings or structures are close by, test leads shall be housed in electrical conduit and terminated in waterproof junction boxes affixed to the structure.
6. Arrangements shall be made to electrically isolate the heating distribution piping under cathodic protection from other buried structures.
7. Special attention shall be given to buried electrical connections. These connections must be carefully checked and protected before backfilling. Backfill material around buried wires shall be free of stone and other sharp objects.
8. Before commencement of the installation, an earth resistivity survey shall be undertaken along the line of conduit, employing specialists in that field. At this time, samples of soil at anticipated pipe depth shall be obtained and the chemical analysis and electrical resistivity for each sample determined. Chemical analysts shall include pH, percentage of water soluble salts, chloride content and sulphate content  
A minimum number of five samples shall be taken from representative locations along the route.
9. Before final acceptance of the cathodic protection system, a detailed, dimensional drawing shall be furnished showing exact locations of all anodes, test stations and the routes of all connecting cables. Methods of installing the materials shall also be detailed on this drawing.
10. The system shall be tested after installation has been completed and a report submitted. Additional anodes or alterations shall be provided as required for satisfactory operation of the system.
11. Proper installation of the cathodic protection system in accordance with the drawings shall be the responsibility of the contractor. However, a technically qualified representative from the designers of the cathodic protection system shall be present during the installation of the anodes and the test stations. The representative shall report in writing to the consulting engineers any work not in conformance with his recommendations. On completion of the work, the company responsible for the design of the cathodic protection system shall submit a certified letter stating that the installation has been made in accordance with the specifications and their recommendations.

12. The system under this section of the specifications shall be guaranteed for a period of one year from date of acceptance thereof. Upon receipt of notice of failure of any part of the system, during the guaranty period, the affected part or parts shall be replaced promptly with new parts by and at the expense of the contractor.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Clean piping before welding.

#### 3.2 INSTALLATION

- A. Installation of Appurtenances and Sensors in Piping:

1. Provide all fittings, wells and openings required for installation of devices to indicate flow, temperature, pressure, etc., in piping systems.

- B. Piping Systems - General:

1. The drawings indicate schematically the size and location of piping. Piping shall be set up and down and offset to meet field conditions and coordination between trades without additional cost. Piping shall conform to the latest revisions of ANSI/ASME B31.9 - "Building Services Piping."
2. Pipework shall conform fully to the following requirements:
  - a. Provide proper provision for expansion and contraction in all portions of pipework, to prevent undue strains on piping or apparatus connected therewith. Provide double swings at riser transfers and other offsets wherever possible, to take up expansion. Arrange riser branches to take up motion of riser.
  - b. Approved bolted, gasketed, flanges (screwed or welded) shall be installed at all apparatus and appurtenances, and wherever else required to permit easy connection and disconnection. Screwed unions with steel faces can be used on piping 1" or less.
  - c. All piping connections to coils and equipment shall be made with offsets provided with screwed or welded bolted flanges so arranged that the equipment can be serviced or removed without dismantling the piping.
  - d. If, after plant is in operation, any coils or other apparatus are stratified or air bound (by vacuum or pressure), they shall be repiped with new approved and necessary fittings, air vents, or vacuum breakers at no extra cost. If connections are concealed in furring, floors, or ceilings, this trade shall bear all expenses of tearing up and refinishing construction and finish, leaving same in as good condition as before it was disturbed.

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3. Pitch steam and condensate lines downward in direction of flow to ensure adequate flow and prevent noise and water hammer. At low points of steam lines provide traps adequately sized to collect condensate. Mains shall be dripped at least every 100 feet of run. All supply mains shall be dripped and trapped on any vertical lift. Provide capped dirt pockets at all traps, riser heels, and wherever dirt and scale may accumulate. To meet job conditions, mains shall set up (with drip connections to return line) to maintain headroom, clear other pipes, etc. Steam mains are to be installed as high as possible. System is to be arranged to secure venting of air to the return line at all low points in steam mains, without permitting ingress of air. In any case, where return or drip piping, to meet job conditions, may have to set down under stoops, doors, etc., and again rise after passing these, the sets shall be made up with 45 degree fittings and with Y-laterals at each end, with brass plugs to permit easy cleaning of trapped portions of pipe. At any points where return mains have to rise again, after being depressed, provide also approved overhead "air lines" (not smaller than 3/4" in size) with adjusting valves, and connect with two high sides. Any turns in water sealed lines shall be made with crosses, with brass plugs in unused outlets to facilitate cleaning.
4. All apparatus subject to high temperature differentials and high steam demand loads such as outdoor air heating coils, domestic hot water heaters and steam-water converters, shall have vacuum breakers installed.
5. Pitch water piping upward in direction of flow to ensure adequate flow without air binding, and to prevent noise and water hammer. Branch connections to mains are to be made in such a manner to prevent air trapping and permit free passage of air. To meet job conditions mains shall set up to maintain headroom, and clear other trades. Provide oversized float operated automatic air vent (with valve & strainer) at all high points particularly at the highest points of return mains and risers and high points of supply risers. Avoid 90 degree lift set-ups in supply lines by using 45 degree ells. Where 90 degree lifts exceed 12" install automatic air vent in supply lines. All lifts in return lines shall be installed with automatic air vents. Pipe outlet of all automatic air vents to an open sight drain if the vent is concealed, or to within two feet of the floor within machine rooms.
6. Miscellaneous drains, vents and reliefs are to be provided as follows:
  - a. Provide 1" drain valves with caps at the heel of all interior main water risers. Provide 1/2" drain valves with caps at the heel of all perimeter water risers.
  - b. Miscellaneous drains, vents, reliefs, and overflows from tanks, equipment, piping relief valves, pumps, etc., shall be run to the nearest open sight drain or roof drain. Provide drain valves whenever required for complete drainage of piping, including the system side of all pumps.
  - c. Provide domestic water connections from valved outlets to any equipment requiring same.
  - d. Provide automatic relief valves set 50# psi below rating pressure of all hot water heating vessels on vessel or in leaving hot water line on vessel side of any valve.
  - e. Contractor shall cap or plug in all systems, all open ended valves for future connections, drains and vents. Also, in order to prevent a dead leg of water and consequent corrosion, provide a 1" open bypass from supply to return with balancing valve in all open condenser water systems.

7. Screwed piping shall conform to the following:
  - a. Pipe nipples - Any piece of pipe 3" in length and less shall be considered a nipple. All nipples with unthreaded portion 1-1/2" and less shall be extra heavy. Only shoulder nipples shall be used. No close nipples will be provided.
  - b. Screw threads shall be cut clean and true; screw joints made tight without caulking. No caulking will be permitted. A non-hardening lubricant will be permitted. No bushings shall be used. Reductions, otherwise causing objectionable water or air pockets, to be made with eccentric reducers or eccentric fittings. All pipes shall be reamed out after cutting to remove all burrs.

END OF SECTION 23 21 13

## SECTION 23 21 23 - HVAC PUMPS

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This Section includes the following categories of HVAC pumps for hydronic systems:
1. Vertical in-line Pumps (150 PSIG Working Pressure).
  2. Vertical in-line Pumps (350 PSIG Working Pressure).
  3. Closed Coupled, End-Suction Pumps.
  4. Frame Mounted, End-Suction Pumps.
  5. Horizontal Axial Split-Case, Double Suction Pumps
  6. Duplex Condensate Pump units.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 23 05 00 - Common Work Results for HVAC.
  2. Section 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).
  3. Section 23 05 50 - Basic Mechanical Materials and Methods.
  4. This section is a part of each Division 23 section.
  5. Division 26 Electrical.

#### 1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Pump Pressure Ratings: At least equal to system's maximum operating pressure at point where installed, but not less than specified. Factory test at 1.5 times working pressure.
- B. Water Temperature: Pump to comply with specific application.
- C. Mounting: As described under "Vibration Isolation".

- D. Pumps shall be selected to operate at or near their point of peak efficiency thus allowing for operation at capacities of approximately 25% beyond design capacity. In addition, the design impeller diameter shall be selected so that the design capacity of each pump (GPM and TDH) shall not exceed 90% of the capacity obtainable with maximum impeller diameter at the design speed for that model.
- E. Rising Curve: Pump characteristic curve shall rise continuously from maximum capacity to shut-off, with shut-off head minimum 10 percent greater than the design head, except for double suction pumps to shut-off head shall be 20 percent greater than design head.
- F. Working Pressure: Construct pumps for the working pressure in pounds per square inch specified or indicated. Factory test at 1.5 times working pressure.
- G. Factory Tests: The pumps shall be factory tested, thoroughly cleaned and painted with (1) coat of machinery enamel prior to shipment. The manufacturer shall include a set of installation instructions with the pumps at the time shipment.

#### 1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product data including certified performance curves and rated capacities, brake horsepower, KW input and full load efficiency complying with motor efficiency requirements. In addition, include weights (shipping, installed, and operating), furnished specialties, and accessories. Indicate pump's operating point on curves.
- C. Shop drawings showing pump layout and connections. Include setting drawings with templates, directions for installation of foundation and anchor bolts, and other anchorages.
- D. Wiring diagrams detailing wiring for power, signal, and control systems and differentiating between manufacturer-installed wiring and field-installed wiring.
- E. Product certificates signed by manufacturers of pumps, certifying accuracies under specified operating conditions and compliance with specified requirements.
- F. Maintenance data for pumps to include in the operation and maintenance manual specified in Division 01. Include startup instructions.

#### 1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with provisions of the following:
  - 1. ASME B31.9 "Building Services Piping" for piping materials and installation.
  - 2. Hydraulic Institute's "Standards for Centrifugal, Rotary & Reciprocating Pumps" for pump design, manufacture, testing, and installation.
  - 3. UL 778 "Standard for Motor Operated Water Pumps" for construction requirements. Include UL listing and labeling.



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4. NEMA MG 1 "Standard for Motors and Generators" for electric motors. Include NEMA listing and labeling.
  5. NFPA 70 "National Electrical Code" for electrical components and installation.
- B. Single-Source Responsibility: Obtain each category of pumps from a single-source and by a single manufacturer. Include responsibility and accountability to answer questions and resolve problems regarding compatibility, installation, performance, and acceptance of pumps.
- C. Product Options: Drawings indicate sizes, profiles, connections, and dimensional requirements of pumps and are based on the specific types and models indicated. Other manufacturers' pumps with equal performance characteristics may be considered. Refer to Section 23 05 00.
- 1.6 SEISMIC DESIGN
- 1.7 This project is located within a seismic zone requiring special provisions for support and restraint of equipment, components, and piping. See Section 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).
- 1.8 DELIVERY, STORAGE, AND HANDLING
- A. Store pumps in dry location.
  - B. Retain shipping flange protective covers and protective coatings during storage.
  - C. Protect bearings and couplings against damage from sand, grit, and other foreign matter.
  - D. Extended Storage Longer than 5 Days: Dry internal parts with hot air or vacuum-producing device. Coat internal parts with light oil, kerosene, or antifreeze after drying.
  - E. Comply with pump manufacturer's rigging instructions.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: The following vendors will be reviewed for approval providing they meet all of the performance requirements of the specifications.
1. Vertical In-Line Pumps:
    - a. Allis-Chalmers Fluid Products Co.; Industrial Pump Div.
    - b. Amtrol, Inc.
    - c. Armstrong Pumps, Inc.
    - d. Burks Pumps, Inc.; Weinman Pump.
    - e. Deming Pump Co.
    - f. Dunham Bush, Inc.
    - g. Goulds Pumps, Inc.
    - h. ITT Fluid Technology Corp.; Bell & Gossett Div.

- i. Paco Pumps, Inc.
- j. Peerless Pump Co.
- k. Taco, Inc.

## 2.2 PUMPS, GENERAL

- A. General: Factory assembled and tested.
- B. Base-Mounted Pumps: Include pump casings that allow removal and replacement of impellers without disconnecting piping.
- C. Types, Sizes, Capacities, and Characteristics: As indicated.
- D. Motors: Furnish single-, multiple-, or variable-speed motors, with type of enclosures and electrical characteristics indicated and as specified under another section of this work. Include built-in thermal-overload protection and grease-lubricated ball bearings. Select each motor to be nonoverloading over full range of pump performance curve.
- E. Factory Finish: Manufacturer's standard paint applied to factory-assembled and -tested units before shipping.
- F. Manufacturer's Preparation for Shipping: Clean flanges and exposed machined metal surfaces and treat with anticorrosion compound after assembly and testing. Protect flanges, pipe openings, and nozzles with wooden flange covers or with screwed-in plugs.

## 2.3 VERTICAL IN-LINE PUMPS (150 PSIG Working Pressure)

- A. Description: Vertical, in-line, centrifugal, closed coupled, single-stage, radially split case design. Include vertical-mounting, bronze-fitted design and mechanical seals rated for 150 psig minimum working pressure and a continuous water temperature of 250 deg F. Include the following:
  - 1. Casing: Cast iron, with suction and discharge flanges of the same size for piping connections and located on a common center line 180 degrees apart for mounting in the pipe line, drain plug in bottom of volute, and threaded gage tappings at inlet and outlet connections. Flanges shall be 125 pound ANSI drilling with a casing working pressure of 175 psi. Pumps shall include a volute type casing suction branch to minimize pumping noise.
  - 2. Impeller: ASTM B 584, cast bronze, statically and dynamically balanced, enclosed, overhung, single suction, and keyed to shaft.
  - 3. Wearing Rings: Replaceable, bronze casing ring.
  - 4. Shaft and Sleeve: Ground and polished steel shaft with bronze sleeve and integral thrust bearing. Include flinger on motor shaft between motor and seals to prevent liquid that leaks past pump seals from entering motor bearings.
  - 5. Seals: Mechanical type, suitable for 250 degrees F, with all metal parts to be 303 stainless steel Viton elastomers and ceramic seat, and carbon washer. A bypass shall be provided between the seal faces and discharge flange to assure adequate venting of the seal chamber and to provide lubrication.
  - 6. Motor: Direct mounted to pump casing. Include lifting and supporting lugs in top of motor enclosure.

## 2.4 GENERAL-DUTY VALVES

- A. Refer to other Division 23 Sections for general-duty gate, ball, butterfly, globe, and check valves.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas, equipment foundations, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting performance of pumps.
- B. Examine roughing-in for piping systems to verify actual locations of piping connections before pump installation.
- C. Examine foundations and inertia bases for suitable conditions where pumps are to be installed.
- D. Do not proceed until unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Install pumps according to manufacturer's written installation and alignment instructions.
- B. Install pumps in locations indicated and arranged to provide access for periodic maintenance, including removal of motors, impellers, couplings, and accessories.
- C. Support pumps and piping separately so that piping is not supported by pumps.
- D. Suspend in-line pumps using continuous-thread hanger rod and vibration-isolation hangers of sufficient size to support weight of pump independent of piping system.
- E. Set base-mounted pumps on concrete foundation. Disconnect coupling halves before setting. Do not reconnect couplings until alignment operations have been completed.
  - 1. Support pump base plate on rectangular metal blocks and shims, or on metal wedges with small taper, at points near foundation bolts to provide a gap of 3/4 to 1-1/2 inches (19 to 38 mm) between pump base and foundation for grouting.
  - 2. Adjust metal supports or wedges until pump and driver shafts are level. Check coupling faces and suction and discharge flanges of pump to verify that they are level and plumb.
- F. Bedplate (Motor Drive): Cast iron, channel steel or structural steel with drip collection chamber and tapped drain connections and a large opening for grouting. Jig drilled and tapped for pumps and NEMA frame motors. On close-coupled pumps, motor assembled as integral part of the complete unit; no bedplate required. Pumps and/or pumps sets shall be leveled with tapered steel wedges to allow a minimum of 3/4 inch pump base and inertia base or concrete pad.

- G. Duplex Condensate Pump Units: Install units for collection of condensate. Make connection to drainage piping, as required.

### 3.3 ALIGNMENT

- A. Align pump and motor shafts and piping connections after setting them on foundations, after grout has been set and foundation bolts have been tightened, and after piping connections have been made. Alignment shall be made with dial indicator to a tolerance of  $\pm .002$ ".
- B. Comply with pump and coupling manufacturers' written instructions.
- C. Adjust alignment of pump and motor shafts for angular and parallel alignment by 1 of 2 methods specified in the H.I.'s Standards for Centrifugal, Rotary & Reciprocating Pumps, "Instructions for Installation, Operation and Maintenance."
- D. After alignment is correct, tighten foundation bolts evenly but not too firmly. Fill base plate completely with nonshrink, nonmetallic grout, with metal blocks and shims or wedges in place. After grout has cured, fully tighten foundation bolts.

### 3.4 CONNECTIONS

- A. Connect piping to pumps as indicated. Install valves that are the same size as piping connecting to pumps.
- B. Install suction and discharge pipe sizes equal to or greater than the diameter of pump nozzles.
- C. Install electrical connections for power, controls, and devices.
- D. Electrical power and connections are specified in Division 26 Sections.

### 3.5 FIELD QUALITY CONTROL

- A. Check suction piping connections for tightness to avoid drawing air into pumps.
- B. Clean strainers.
- C. Check Alignment.
- D. Verify that piping is not supported by pump.
- E. Set pump controls.
- F. Guarantee: Pump to deliver required GPM against design and within  $\pm 3\%$  without overheating motor, bearings or any other parts and without producing noise audible outside the space in which the pumps are installed. Certified test statements to be provided for each pumping unit. Seals to be replaced without charge if faulty operation or unusual wear occurs during guarantee period, not caused by maintenance faults.

### 3.6 COMMISSIONING

- A. Start -up: Pumps shall be installed in accordance with the standards of the Hydraulic institute.
- B. Final Checks Before Startup: Perform the following preventive maintenance operations and checks before startup:
  - 1. Lubricate bearings.
  - 2. Remove grease-lubricated bearing covers, flush bearings with kerosene, and clean thoroughly. Fill with new lubricant according to manufacturer's recommendations.
  - 3. Disconnect coupling and check motor for proper rotation that matches direction marked on pump casing.
  - 4. Check that pumps are free to rotate by hand. Pumps for handling hot liquids shall be free to rotate with pump hot and cold. Do not operate pump if it is bound or even drags slightly until cause of trouble is determined and corrected.
  - 5. Check that pump controls are correct for required application.
  - 6. The pump manufacturer shall check the motors and pumps for proper alignment glands for proper tightness and all bearings for proper lubrication before pumps are started.
  - 7. The HVAC Contractor shall instruct the Testing and Balancing Subcontractor to take amperage readings on each phase of all pump motors and after 15 days Of operation the HVAC Contractor shall recheck and adjust as required alignment and gland tightness and bearing lubrication.
- C. Starting procedure for pumps with shutoff power not exceeding safe motor power:
  - 1. Prime pumps, opening suction valve, closing drains, and preparing pumps for operation.
  - 2. Open cooling water supply valves in cooling water supply to bearings, where applicable.
  - 3. Open sealing liquid supply valves if pumps are so fitted.
  - 4. Open warm-up valves of pumps handling hot liquids if pumps are not normally kept at operating temperature.
  - 5. Open circulating line valves if pumps should not be operated against dead shutoff.
  - 6. Start motors.
  - 7. Open discharge valves slowly.
  - 8. Check general mechanical operation of pumps and motors.
  - 9. Close circulating line valves once there is sufficient flow through pumps to prevent overheating.
- D. When pumps are to be started against closed check valves with discharge shutoff valves open, steps are the same, except that discharge valves are opened sometime before motors are started.
- E. Refer to Division 23 Section "Testing, Adjusting, and Balancing" for detailed requirements for testing, adjusting, and balancing hydronic systems.

END OF SECTION 23 21 23

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## SECTION 23 25 00 - CHEMICAL WATER TREATMENT

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

A. This Section includes chemical treatment systems for the following:

1. Hot-water closed heating systems.
2. Steam Systems.
3. Boiler Water (L.P. Steam).
4. Deareator Systems.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to work of this Section.
- B. Section 23 05 00 - Common Work Results for HVAC
- C. Section 23 05 48 - Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).
- D. Section 23 05 50 - Basic Mechanical Materials and Methods.
- E. This section is a part of each Division 23.

#### 1.3 SCOPE OF WORK

- A. Provide, for the full construction period as well as for 1 additional year starting from the date of acceptance by Commissioner, complete water treatment equipment, associated piping, chemicals and service for systems as specified and/or shown on the drawings. Equipment, chemicals and service shall be provided by the independent water treatment company. That company shall supervise the installation of the chemical feed equipment, chemical cleaning of the systems and testing. Provide all necessary wiring to an adequate source of electric power, and all required interwiring.
- B. Dosage and Control
  1. All chemical programs must be selected for the building's water supply, and must be adjusted so that when applied at the concentrations of active chemicals and cycles of concentration recommended by the Supplier, the programs will meet the performance requirements as specified herein.
- C. It is responsibility of the Supplier to obtain and become familiar with all necessary building technical plant and operating information. Appointments must be made with facility management and engineering personnel for this purpose.

- D. Daily records of all water treatment activities shall be maintained by the water treatment company and made available to the building operations personnel representing the Commissioner. These records shall consist of all communications and test records from the water treatment company, all chemical additions, all fill and drain cycles, cleanings, additions to the piping system and any other pertinent data, starting at the first filling of the system.
- E. The water treatment company shall include with service all required chemicals for testing, initial cleaning, startup treatments, test equipment and all chemicals required for the one year period during which service is rendered.
- F. All service visits shall be confirmed in writing to the Commissioner so that complete record of service activities is available for examination by the Commissioner and engineer.
- G. The water treatment company selected shall be responsible for insuring that all pipe systems and equipment for which they are responsible remain clean and free from all corrosion during all testing or filling and draining operations.

Under no circumstances shall raw, untreated water be introduced into these pipes and equipment or be allowed to remain in place anytime during construction. All hydronic testing shall only be with treated water at all times.

Upon completion of all building construction operations associated with the piping system in question, the system shall be cleaned by the water treatment company using appropriate chemicals which are nonaggressive to the materials in that pipe system, but which will clean surface rust, oil, grease and silt from the steel piping and other contaminants associated with the piping fabrication process.

Chemicals for initial treatment of the water must be on-hand before cleaning is started, so that these chemicals can be added to the initial water fill after cleaning is complete. Under no circumstances shall the cleaned system be filled with untreated water or allowed to stand empty between cleaning and initial fill.

The start-up chemical treatment program shall be, at a minimum, 3-4 times the dosage of the maintenance chemical treatment program.

The cleaning operation shall be completed when agreed upon representative pipe lengths which have been in place during the entire building process have been satisfactorily cleaned as established by all interested parties.

- H. At no time shall the Mechanical Contractor add water to a system without that water containing a corrosion inhibiting treatment chemical. The addition of minimal amounts of untreated water to an already treated system is allowed.
- I. Hydrostatic Testing Corrosion Inhibitor
  - 1. If sections of system must be hydrostatically tested prior to cleanout, appropriate inhibitor shall be added to the test water at sufficient level to totally passivate metal and provide protective film on pipe surfaces to prevent corrosion prior to cleanout and treatment. Mechanical Contractor shall be responsible to coordinate this treatment with the water treatment contractor.



2. At no time shall water be added to a system without that water containing a corrosion inhibiting treatment chemical.

J. All materials installed in the system such as pumps, pipe, fittings, dielectrics, relays, solenoid valves, flow switches, etc. shall have a pressure rating equal to or greater than the maximum calculated pressure expected at the installed locations.

#### 1.4 MICROBIOLOGICAL CONTROL

A. The Supplier must provide a specific microbiological control program. Both oxidizing and non-oxidizing biocides are acceptable, along with biodispersants and other control measures. The program must list specific biocides with application dosages and frequency, and must include all of the information specified herein. Acquired immunity to one biocide must be considered.

#### 1.5 CHEMICAL PROGRAMS

A. All chemicals provided for use in the open condenser water and all closed water systems, and for testing purposes, must meet all applicable EPA and OSHA requirements as well as all applicable federal, state and local regulations. In addition, all chemicals must meet the following criteria:

1. Toxicity

a. Chemicals must be non-toxic to personnel and safe to handle when usual precautions are observed.

2. Disposal and Cleanup

a. At use concentrations in the systems, all chemicals must be acceptable in the building's sewer system. The supplier must provide clear directions for cleanup of accidental chemical spills, including necessary safety precautions, and must ensure that sufficient supplies and equipment required for cleanup of chemical spills are on hand for emergency use.

B. Furnish chemicals recommended by water treatment system company for treating water to meet specified water quality. Provide only chemicals that are compatible with piping materials, seals and all accessories.

#### 1.6 PERFORMANCE

A. All chemical programs recommended for use in the building water and steam systems must meet or exceed the following performance guidelines.

1. Steam Systems

Condensate & Steam

(a) Deposition

No detectable deposition

(b) Corrosion

No detectable deposition

(c) Oxygen Pitting	None
(d) Dissolved oxygen	No detectable
(e) Water and steam quality	As per ASME and other guidelines

B. Corrosion and Deposit Control

1. The supplier must provide a specific corrosion, scale and deposit control program for mild steel, copper alloys and any other metals present in the system. Corrosion inhibitors for each metal to be protected must be specifically identified.

1.7 WATER TREATMENT AND CHEMICAL CLEANING (STEAM SYSTEMS)

- A. Furnish complete water treatment equipment, piping, chemicals and service for systems as specified and/or shown on the prints. Equipment, chemicals, and service shall be provided by an independent water treatment company who shall supervise the installation of the chemical feed equipment and chemical cleaning of the systems.
- B. This water treatment company shall be regularly engaged in this type of work and service. Further, this firm shall include the start-up of chemical treatment; instruct the Commissioner's in the performance of control tests and their interpretation and to supervise, through periodic visits, the progress of the water treatment program. Such service shall be provided during construction and for one full year after the Commissioner's acceptance of the facilities.
- C. The water treatment company shall include with service all required chemicals for initial cleaning, start-up treatments, test equipment and all chemicals required for start-up and the one year period during which service is rendered.
- D. All service visits shall be confirmed in writing to the Commissioner so that a complete record of service activities is available for examination by the Commissioner, engineering firm or contractor.
- E. Chemical Treatment - Cleaning - Degreasing
  1. Provide a supervised program of cleaning and degreasing chemicals used in the specified systems prior to start-up. Boilers shall be boiled out with an alkaline boiling out compound as recommended by the boiler manufacturer or the water treatment vendor. After boil-out is completed, the boiler shall be dumped, flushed and refilled with the correct corrosion inhibitors as supplied by the water treatment vendor. The system shall then be run for 24 hours to waste before the boiler is placed in service. All cleaning shall be in accordance with the National Association of Corrosion Engineers Recommended Practice - NACE RP0182-95.

The chemical cleaning procedure shall be as described in this section of the specification

#### 1.8 CHEMICAL TREATMENT FEED AND CONTROL

- A. Chemicals shall be supplied in bulk consistent with established safety guidelines. The Supplier shall supply all equipment required to properly feed the chemical programs and to control system operations in the ranges recommended by the Supplier for optimum performance.
- B. The chemical feed and control system shall be supplied by the water treatment vendor and shall be designed to feed chemicals to the condenser water system based on blowdown (conductivity control) or make-up (water meter control) as recommended by the water treatment vendor and approved by the Commissioner or his representative.
  - 1. With either system, the controller shall provide grounded AC receptacles for chemical treatment pumps and switched for automated or manual control of chemical feed and blowdown.
  - 2. When chemicals additions are taking place, the system shall be under normal circulation conditions.

#### 1.9 SERVICE PROGRAMS

- A. The Supplier shall provide a complete service program to support his chemical treatment program and to protect the building water systems. The Supplier shall visit the building biweekly or as required, and shall be available for emergency service on 24 hours notice.
- B. Water Testing by Building Personnel

The Supplier shall provide all field test kits and reagents required for maintaining proper control of chemical additions and operating conditions in the building water and steam systems. The supplier shall provide a Hach DR 2020 or equivalent test unit for use by building personnel. The supplier shall train building personnel in the proper testing procedures and shall supply suitable forms for recording test results. Costs for test equipment and annual costs for reagents shall be specifically identified.

- 1. Daily Testing of Steam
  - a. Codensate pH.
  - b. Other tests as required by building management of the Supplier.
- C. Testing by the Supplier
  - 1. The Supplier shall perform independent tests on all water systems twice per month or as agreed with building management. The Supplier's tests shall include all tests run by building personnel plus steam purity check and other tests as needed. The supplier shall compare his results with building test data and prepare a report for building management after each visit. As a minimum, this report shall discuss abnormalities and variations, and highlight any actions needed to maintain good results in all systems. The supplier shall take quarterly water samples from all systems for complete chemical and microbiology analyses.

2. Inspections

- a. All condensers, heat exchangers, and steam systems shall be inspected annually and as available, using fiber optic and ultrasonic test equipment as needed. A photographic record shall be kept of the condition of the tubesheets, heads and accessible piping.

1.10 CHEMICAL TREATMENT TESTING EQUIPMENT

- A. Provide a complete test set with apparatus and chemical reagents for running all control tests required for the condenser water, closed water, open water system and boiler systems, as determined by the water treatment company. The test equipment shall include a wall hung metal cabinet with light, for storage of test reagents and apparatus.

1.11 DIELECTRIC FITTINGS

- A. Provide dielectric fitting to isolate joined dissimilar materials to prevent galvanic action and stop corrosion. Fittings shall be of the non-reducing type, which shall be suitable for the system fluid, pressure, and temperature and shall not restrict the flow.

1.12 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. As a minimum, the following information must be supplied for each chemical to be used in the building water systems:
  1. Product data sheet.
  2. MSD sheet.
  3. Generic composition.
  4. Product dosage, during startup and normal operation.
  5. Concentrations of active ingredients in the circulating water.
  6. Required operating parameters, e.g. pH and cycles of concentration.
  7. Product cost per pound and required pounds per year.
  8. Total annual program cost for chemicals, reagents and required analytical equipment.
- C. In addition, submit the following for approval:
  1. System installation drawings and diagrams.
  2. Product information and material safety data sheets on each component, device, pump, controller, valve, etc. being supplied in the system.

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3. Analysis of raw water supplying each system. Field test reports indicating and interpreting test results relative to compliance with specified requirements.
4. Product information sheets and MSD sheets on all chemical products being supplied for each system including chemicals. Include manufacturer's technical product data, rated capacities of selected equipment clearly indicated, water-pressure drops, weights (shipping, installed, and operating), furnished specialties, accessories, and installation and startup instructions.
5. Recommended feed rates on each chemical product.
6. Analysis of blow down water from each system requiring blowdown.
7. Recommended quantity of blowdown water from each system requiring blowdown.
8. Recommended operating conditions for each system including cycles of concentration, chemical test limits of water treatment system set points.
9. Shop drawings from manufacturer detailing equipment assemblies and indicating dimensions, weights, loadings, required clearances, method of field assembly, components, and location and size of each field connection.
10. Wiring diagrams detailing power and control wiring and differentiating clearly between manufacturer-installed wiring and field-installed wiring.
11. Maintenance data for chemical water treatment to include in the operation and maintenance manual specified in Division 01. Include detailed manufacturer's instructions and parts list for each item of equipment, control, and accessory. Include troubleshooting maintenance guide.
12. Name of Vendor.

1.13 QUALITY ASSURANCE

- A. **Supplier Qualifications:** A recognized chemical water treatment supplier with warehousing facilities in the Project's vicinity and that is or employs an experienced consultant, available at reasonable times during the course of the Work to consult with Contractor, Architect, and Commissioner about water treatment.
- B. **Water Treatment Suppliers** must have at least three years of experience applying and servicing water treatment programs in similar type and sized buildings in the area the building is located.
- C. The water treatment company shall be regularly engaged in this type of work and service. It shall have on its staff a graduate chemical engineer with experience in water treatment. Further, this firm shall include the start-up of chemical treatment; instruct the Commissioner in the performance of control tests and their interpretation and to supervise, through periodic visits, the progress of the water treatment program. Such service shall be provided during construction and for one year after the Commissioner's acceptance for the facilities.

- D. Water Treatment Suppliers must have a laboratory that is equipped and staffed to analyze water and deposit samples in accordance with standard methods. Water treatment supplier must have trained service personnel available to provide year-round service support to the building and respond to any emergency calls.
- E. Chemical Standards: Meet state and local pollution-control regulations.
- F. Comply with NFPA 70 for components and installation.
- G. Listing and Labeling: Provide products specified in this Section that are listed and labeled.
  - 1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.
  - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

#### 1.14 MAINTENANCE GUARANTEE

- A. Service Period: Provide chemicals and service program for period of one year from startup date of equipment, including the following:
  - 1. Initial water analysis and recommendations.
  - 2. Startup assistance.
  - 3. Training of operating personnel.
  - 4. Periodic field service and consultation.
  - 5. Customer report charts and log sheets.
  - 6. Laboratory technical assistance.

#### 1.15 EXTRA MATERIALS

- A. Chemicals: Furnish quantity equal to 50 percent of amount initially installed.

### PART 2 - PRODUCTS

#### 2.1 BIDDERS AND MANUFACTURERS

- A. The following vendors will be reviewed for approval providing they meet all of the performance requirements of the specifications.
  - 1. Betz Industrial
  - 2. Ashland Chemical Company, Drew Industrial Division
  - 3. Diversey Water Management.

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4. Nalco Chemical Company
5. The Metro Group

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install treatment equipment level and plumb, according to manufacturer's written instructions, rough-in drawings, the original design, and referenced standards.

#### 3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. The following are specific connection requirements:
  1. Install piping adjacent to equipment to allow servicing and maintenance.
  2. Piping: Conform to applicable requirements of Division 23
- B. Electrical: Conform to applicable requirements of Division 26
  1. Provide all necessary wiring to an adequate source of electric power and all required interwiring.
  2. Install electrical devices furnished with boiler but not specified to be factory mounted.

#### 3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Provide the services of a qualified independent testing agency to perform field quality-control testing.

#### 3.4 ADJUSTING

- A. Sample boiler water at 1-week intervals after boiler startup for a period of 5 weeks and prepare certified test report for each required water performance characteristic. Where applicable, comply with ASTM D 3370 and the following standards:
  1. Silica: ASTM D 859.
  2. Steam System: ASTM D 1066.
  3. Acidity and Alkalinity: ASTM D 1067
  4. Iron: ASTM D 1068.
  5. Water Hardness: ASTM D 1126.
  6. Particulate and Dissolved Matter: ASTM D 1888.
- B. Sample system water for each system at 1-week intervals after startup for a period of 5 weeks and prepare certified test report for each required water performance characteristic.

### 3.5 CLEANING

- A. After completing system installation, including outlet fittings and devices, inspect exposed parts and finish. Remove burrs, dirt, and construction debris; repair damaged finishes, including chips, scratches, and abrasions.
- B. At no time shall the Mechanical Contractor add water to a system without a corrosion inhibitor treatment. The addition of minimal quantities of untreated water to a satisfactorily treated system is allowed.
- C. Ensure that system is operational, filled, started, and vented prior to cleaning. Place terminal control valves in OPEN position during cleaning. Use water meter to record capacity in each system.
- D. Add cleaning chemicals as recommended by manufacturer.
  - 1. Hot-Water Heating System: Apply heat while circulating, slowly raising system to design temperature; maintain for a minimum of 12 hours. Remove heat and allow cooling; draining and refilling with clean treated water. Circulate for 6 hours at design temperature, then drain. Refill with clean treated water and repeat until system cleaner is removed.
  - 2. Steam System: Fill steam boilers only with cleaner and treated water. Apply heat and maintain for a minimum of 12 hours. Cool and drain. Refill with clean treated water, drain, refill, and check for sludge. Repeat until system is free of sludge. Apply heat to produce steam for piping system and maintain for a minimum of 8 hours. Bypass traps and waste condensate.
  - 3. Open System: Flush with clean treated water for a minimum of one hour. Drain completely and refill.

### 3.6 COMMISSIONING

- A. Startup Services: Provide the services of a factory-authorized service representative to provide startup service and to demonstrate and train Commissioner's maintenance personnel as specified below.
- B. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Startup Procedures: During boiler system startup, operate boiler water treatment system (after charging with specified chemicals) to maintain required steady-state characteristics of feedwater.



### 3.7 REPORTING REQUIREMENTS

- A. In addition to the regular service reports specified above. The Supplier shall prepare a quarterly report for building management. This report shall contain a summary of routine test results, corrosion coupon and microbiological tests results, projects, accomplished during the preceding quarter, and specific action recommendations to correct any abnormal conditions in the water systems. The analytical data should be presented in graphical form for easy visualization and recognition of trends. Annual review meetings may also be scheduled by building management as desired.

### 3.8 DEMONSTRATION

- A. Provide services of supplier's technical representative for a full day to instruct Commissioner's personnel in operation, maintenance, and testing procedures of water treatment systems.
- B. Train Commissioner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
- C. Review data in the operation and maintenance manuals. Refer to Section 23 05 00.
- D. Schedule training with City of New York, through the Commissioner, with at least 7 days' advance notice.

END OF SECTION 23 25 00

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## SECTION 23 31 13 - METAL DUCTWORK

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes all the rectangular, round and flat-oval metal ducts and plenums for the complete heating, ventilating and air conditioning systems in all pressure classes. In addition, this section includes the following:

1. Sheet Metal
2. Round and Flat Oval Ducts
3. Air Casings and Plenums
4. Dampers for Balancing
5. Flexible Connections
6. Air Intakes and Discharges

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections: The following sections contain requirements that relate to this section:
1. Section 23 05 00 - Common Work Results for HVAC.
  2. Section 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).
  3. Section 23 05 50 - Basic Mechanical Materials and Methods.
  4. Section 23 07 00 - HVAC Insulation.
  5. Section 23 09 00 - HVAC Instrumentation and Controls.
  6. This section is a part of each Division 23 Section.
  7. Division 26 - Electrical.

#### 1.3 REFERENCES

- A. SMACNA.
- B. ASHRAE.
- C. NFPA.

D. International Mechanical Code.

#### 1.4 QUALITY ASSURANCE

- A. Qualify welding processes and welding operators in accordance with AWS.D1.1 "Structural Welding Code - Steel" for hangers and supports and SWS.D9.1 "Sheet Metal Welding Code."
- B. Qualify each welder in accordance with AWS qualification tests for welding processes involved. Certify that their qualification is current.
- C. NFPA Compliance: Comply with the following NFPA Standards:
  - 1. NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems," except as indicated otherwise.
  - 2. NFPA 96, "Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors for Commercial Cooking Equipment," Chapter 3, "Duct System," for kitchen hood duct systems, except as indicated otherwise.
- D. SMACNA - HVAC Duct Construction Standards, Latest Edition.
- E. The contractor must comply with the specification in its entirety.
- F. At the discretion of the Commissioner, sheet metal gauges, and reinforcing may be checked at various times to verify all duct construction is in compliance. If on inspections, changes have been made without prior approval, the contractor will make the applicable changes to comply with this specification, at the contractor's expense.

#### 1.5 SEISMIC DESIGN

- A. This project is located within a seismic zone requiring special provisions for the support and restraint of equipment, components and piping. See Section 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design) for additional requirements.

#### 1.6 SUBMITTALS

- A. Submit product data under provisions of Section 23 05 00.
- B. Submit duct fabrication standards and methods of installation, in compliance with SMACNA and these specifications, for review by Architect. Clearly indicate the combination of metal gauges and reinforcement intended for each pressure classification. Duct fabrication shall not be allowed until a satisfactory review of this Standard has been performed.
- C. Include product description, list of materials for each service, and locations.
- D. Product data including details of construction relative to materials, dimensions of individual components, profiles, and finishes for the following items:
  - 1. Duct liner.

2. Sealing Materials.
  3. Fire-Stopping Materials.
  4. Dampers, turning vanes, access doors, plenums, flexible connectors, etc.
- E. Shop drawings from duct fabrication shop, drawn to scale not smaller than 3/8 inch equals 1 foot, detailing:
1. Fabrication, assembly and installation details, including plans, elevations, sections, details of components, and attachments to other work.
  2. Duct layout for all areas of work, indicating pressure classifications and sizes in plan view. For exhaust duct systems, indicate the classification of the materials handled as defined in this Section.
  3. Fittings.
  4. Reinforcing details and spacing.
  5. Seam and joint construction details.
  6. Penetrations through fire-rated and other partitions.
  7. Hangers and supports, including methods for building attachment, seismic restraint, vibration isolation, and duct attachment.
- F. Maintenance data for volume control devices and fire dampers, in accordance with Division 23 Section "Common Work Results for HVAC" and Division 01.

## 1.7 DEFINITIONS

- A. Sealing Requirements Definitions: For the purposes of duct systems sealing requirements specified in this Section, the following definitions apply.
1. Seams: A seam is defined as jointing of two longitudinally (in the direction of airflow) oriented edges of duct surface material occurring between two joints. All other duct surface connections made on the perimeter are deemed to be joints.
  2. Joints: Joints include girth joints, branch and subbranch intersections; so-called duct collar tap-ins; fitting subsections, louver and air terminal connection to ducts; access door and access panel frames and jambs; duct, plenum and casing abutments to building structures.

## 1.8 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide a duct system with minimum resistance to airflow. Take-offs shall be throated and transitions made as gradual as possible. 'Bullhead' or sharp take-offs are not acceptable. Branch take-offs shall be 45 deg entry type. Straight tap or butt flanged connections are not acceptable. Clinch lock connections are preferred.

- B. The duct system design, as indicated, has been used to select and size air moving and distribution equipment and other components of the air system. Changes or alterations to the layout or configuration of the duct system must be specifically approved in writing. Accompany requests for layout modifications with calculations showing that the proposal layout will provide the original design results without increasing the system total pressure.

**PART 2 - PRODUCTS**

**2.1 GENERAL**

- A. Duct dimensions indicated on drawings are clear, inside dimensions. The sheet metal dimensions shall be increased to accommodate internal liner where liner is required.
- B. Drawings are diagrammatic and indicate the arrangement of the principal apparatus, ductwork and piping and shall be followed as closely as possible. All offsets, rises, drops, fittings and accessories are not indicated on drawings, but shall be provided as required to install system. Carefully investigate structure, finish conditions, and the work of other sections affecting sheet metal work, including work associated with testing, adjusting and balancing, in order to arrange all items accordingly. Provide best possible arrangement so as to provide maximum headroom and maintenance clearances.
- C. Furnish and install intake and exhaust plenums attached to louvers.

**2.2 SHEET METAL**

- A. Duct systems other than range hood exhaust (or fume hood exhaust) shall be galvanized steel and shall comply with the pressure classifications following in compliance with Page 1-18 to Page 1-31 inclusive of SMACNA HVAC Duct Construction Standards, latest edition. Duct sealants shall have a U.L. label and shall have a flame spread rating not over 25, and a smoke developed rating no higher than 50 when in the final dry state.

Duct System	SMACNA Table No.	SMACNA Pressure Classification	SMACNA Seal Classification
All return ducts and exhaust ducts.	1-6	-3" W.G.	A

**2.3 ROUND AND FLAT OVAL DUCTS**

- A. Construction: In accordance with HVAC Duct Construction Standards as specified above.
- B. Round ductwork shall be spiral seam construction. Gauges and fittings shall be in accordance with SMACNA Duct Construction Standard (as referenced above).
- C. Elbows, tees and branch take-offs shall be made of similar material to round straight ductwork.

#### 2.4 AIR CASINGS AND PLENUMS

- A. All air casings and plenums shall be constructed of No. 16 gage galvanized iron braced and stiffened on outside by means of 2" x 2" x 1/4" galvanized steel angles not to exceed 26" width, or with 16 gauge standing seam panels not to exceed 26" in width. Standing seams are to have additional right angle bend and shall be capped with No. 18 gage galvanized "U" cap over entire length of seam. All joints shall be caulked to make them airtight. The bottom of all air chambers at the floor shall be gasketed to prevent air leakage.
- B. The plenum installation shall be capable of withstanding a positive or negative internal static pressure of 10" W.G.

#### 2.5 DAMPERS FOR BALANCING

- A. Provide manual dampers for balancing the air systems, as specified in Section 23 33 13.
- B. Construction shall conform to latest SMACNA standards. When installing dampers in ducts to be insulated provide raised bracket for damper quadrant with height equal to insulation thickness.
- C. Provide volume dampers in branch take-offs and in main branches and ducts of all ductwork systems (supply, return and exhaust) for properly regulating and balancing airflow to all terminal outlets, whether indicated on drawings or not.
  - 1. Volume dampers shall be controlled by an approved galvanized locking quadrant indicating the damper position.
  - 2. Volume dampers installed in ductwork that is to be insulated shall have extended activator/handle rods such that the adjustment of the damper handle will not disturb the insulation.
  - 3. Locate damper as far as possible from air outlet to avoid noise transmission.
- D. Coordinate with G.C. for easy access to damper.

#### 2.6 FLEXIBLE CONNECTIONS

- A. All fan and air supply unit connections, both at inlet and discharge shall be made with flexible material so as to prohibit the transfer of vibration from fans to ductwork connecting thereto, without air leakage. The material between the clamps shall have sufficient slack so as to prevent tearing due to fan movement.
- B. The flexible connections shall be a minimum of 12" long. Material shall be mechanically locked to the outside helix. Use of adhesives to lock fabric in place is not acceptable. The helix is constructed of a corrosive resistant galvanized steel, formed and mechanically locked to the duct fabric on the outside to prevent tearing.
- C. Flexible fabric ductwork shall be rated at 6" positive pressure and at 4" negative pressure.
- D. Flexible metal duct shall be listed UL Class 1.

- E. Flexible connections shall be fabricated from approved flame proofed fabric conforming to NFPA 90A. Asbestos cloth is not permitted.
- F. Indoor installations shall be Neoprene or vinyl coated fabrics.
- G. Manufacturers
  - 1. Flexmaster, Type 8

## 2.7 AIR INTAKES AND DISCHARGES

- A. Air intake and discharge louvres and screens in the facade of the building shall be furnished and installed under another contract.
- B. Air intake louvres where indicated in drawings, not in facade of building, such as behind building skin, shall be furnished and installed in this contract. Such louvres shall be minimum 14 gauge aluminum with maximum blade length between mullions of 4'-0". Provide weather tight joints between louvre frames and masonry openings by means of flashing and/or caulking. Provide ½" mesh heavy aluminum wire screens.

## PART 3 - INSTALLATION

### 3.1 GENERAL SHEET METAL DUCTWORK INSTALLATION

- A. The specifications refer to SMACNA standards, which shall be considered minimal. If local codes require other standards than described in SMACNA, local codes shall govern.
- B. Ductwork shall be installed to true alignment, generally parallel or perpendicular to adjacent building walls, floors and ceilings, so as to present a neat and workmanlike appearance.
- C. Provide necessary offsets, transitions and streamliners to avoid interference with the building construction, piping, or equipment. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- D. Provide fittings, branches, inlets and outlets in such a manner that air turbulence is reduced to a minimum.
- E. Provide a duct system with minimum resistance to airflow. Take-offs shall be throated and transitions made as gradual as possible. 'Bullhead' or sharp take-offs are not acceptable. Branch take-offs shall be 45 deg entry type. Straight tap or butt flanged connections are not acceptable. Clinch lock connections are preferred.
- F. Provide straight runs of ductwork at equipment, fans, coils, terminal boxes and humidifiers per manufacturer's recommendations.
- G. Tees and laterals at 90 deg or round ducts shall be 45 deg lateral or 90 deg tee with oval to round tap. 90 deg tee fitting or 90 deg tap is not acceptable. Conical tees are acceptable.
- H. Provide flexible connector where ductwork connects to fans, air handling units and other rotating equipment and where indicated on drawings.



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- I. Furnish and install manual dampers, fire dampers, registers, grilles, register boxes, access doors, sound traps, etc., as described elsewhere in the specifications and as required for a complete system, ready for operation.
- J. Where fire dampers or automatic dampers are shown on drawings or are required, their selection shall be made so that the dampers of all ratings and types shall be of the nominal 100% face area type, with blade package and frame components out of the airstream. These dampers shall include the required oversize enclosures that shall be sealed by the damper manufacturer for the appropriate duct pressure class into which they are installed. Such dampers shall have appropriate rectangular, flat oval or round duct collars to facilitate connection of mating ductwork. The Contractor shall be responsible for any additional sealing of duct collars and connections required to maintain the duct seal class requirements, but shall not jeopardize the UL breakaway connection.
- K. All dampers are to be selected and installed with duct transitions so that the damper clear open area (including frames, stops, etc.), equals to or exceeds the connecting duct (inlet and outlet) clear open area (duct clear inside dimensions). The mechanical contractor shall provide the required duct transitions.
- L. Repair damaged galvanized surfaces with inorganic zinc rich paint.
- M. Repair PVC coated steel ductwork where coating is damaged or exposed by connections.
- N. Bellmouth fittings shall be constructed to match duct metered requirements as specified herein. Bellmouth connection to duct main shall be made with gasket, sheet metal screws and duct sealant.
- O. Enclose dampers located behind architectural intake or exhaust louvers in a sheet metal collar and seal to building construction.
- P. Air volume control on parallel flow branches shall be accomplished with branch dampers.
- Q. Install special equipment items in ductwork systems, including automatic dampers, thermostats, thermometers, airflow measuring devices and other related controls, according to manufacturer's recommendations or under the supervision of the manufacturer.
- R. All required supports, hangers, anchors, and guides shall be provided and installed by this contractor.
- S. All ductwork; flues, register boxes, air chambers, dampers, and all auxiliary work of any kind, necessary to make the various air conditioning, ventilating and heating systems of the building complete and ready for operation, shall be furnished and installed.
- T. 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, at no additional cost to the City of New York.
- U. Ductwork connected to intake or discharge louvers shall be galvanized steel, painted for the first 10 feet with bitumastic, pitched to a low point, and provided with a 1-1/2" copper drain piped by this trade to a building drain.

- V. A snap lock seam shall not be permitted as a substitute for the Pittsburgh lock except for systems with pressure classification +1" and less and where longitudinal joints are sealed and riveted at corners.
  - W. Where the trade elects to use "Duct-Mate" for joints or similar product, PVC clips are not permitted (use metal) and all corners shall be bolted (boltless connectors are not permitted) except where local codes permit Duct-Mate joints as breakaway connection at fire dampers. Only gaskets manufactured by Duct-Mate are acceptable.
  - X. Use gasketed type joint when dissimilar metals are joined.
  - Y. All ductwork unless otherwise noted shall be hung with 1 in. x 1/8 in. galvanized iron bands. Ductwork with cross sectional area under 4 square feet shall be hung on 8'-0 in. centers. For ducts with a cross-sectional area of more than 4 sq. ft. but not over 10 sq. ft. hangers shall be no more than 6 feet apart, and for ducts with a cross sectional area of more than 10 sq. ft. hangers shall be no more than 4 ft. apart. All hangers shall be bent (2" minimum) under the bottom as well as the sides and secured with sheet metal screws.
  - Z. All ductwork shall be substantially built with approved joints and seams smooth on the inside and a neat finish on the outside. Duct joints as near air tight as possible, with laps made in the direction of air flow and no flanges projecting into the air stream. Ducts shall be adequately braced to prevent vibration. All angles shall be galvanized or shop painted with two coats of rust resistant paint.
- AA. Changes in shape and dimension shall conform to the following:
- 1. Increase and reduce duct sizes gradually. Limit transition angle (for each side) to the following:
    - a. For increases in cross-sectional area, the shape of the transformation shall not exceed 1" in 7".
    - b. For reductions in area the slope may be 1" in 4" but 1" in 7" is preferred.
- BB. Changes in direction shall conform to the following:
- 1. Unvaned elbow with throat radius not less than 1/2 the width of the duct.
  - 2. Provide square elbows in rectangular ducts where radius elbows will not fit or where specifically noted on drawings. Square elbows with single thickness duct turns shall be as per SMACNA with 3-1/4" spacing, and are acceptable in ducts with not more than 2200 FPM air velocity. For higher velocities, use sweep type vanes.
- CC. Provide No. 16 USSG, 3/4" wire mesh screen over each open return duct in hung ceiling unless register or grille is shown.

### 3.2 DUCT SEALANTS

- A. Sealant: Water based elastomeric compound, gun or brush grade, maximum 25 flame spread and 50 smoke developed (dry state) specifically for sealing ductwork. Use products as recommended by manufacturer for low, medium or high pressure systems.
  - 1. Manufacturers
    - a. Hardcast
    - b. United McGill
    - c. Polymer Adhesives
    - d. Ductmate
- B. Tape: Use only tape specifically designated by the sealant manufacturer. SMACNA recommends that foil tape not be used and that pressure sensitive tape not be used on bare metal surface or on dry sealant.

### 3.3 SEISMIC

- A. See Section "Seismic, Wind and Flood Load Design".
- B. See "Foundations, Vibration Isolation, and Supports for Rigidly Supported Equipment (Seismic Design)."
- C. All other equipment and ductwork shall be rigidly supported and provided with approved seismic restraints to maintain the equipment and ductwork in a captive attitude without excessive motion. All ductwork seismic restraints shall be installed with a maximum spacing to limit transmitted forces to the building structure to acceptable limits.

### 3.4 SCHEDULE

- A. See drawings.

END OF SECTION 23 31 13

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## SECTION 23 33 13 - DAMPERS

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

A. This section includes following:

1. Dampers.
2. Dampers for Balancing.
3. Pressure Sensitive - Backdraft Dampers.
4. Dampers for Fire Protection.
5. Fusible Link Dampers.
6. Automatic Control Dampers.
7. Refer to other Division 23 sections for air distribution devices and accessories required in conjunction with this work.

#### 1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Related Sections: The following sections contain requirements that relate to this section:

1. Section 23 05 00 - Common Work Results for HVAC.
2. Section 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).
3. Section 23 05 50 - Basic Mechanical Materials and Methods.
4. Section 23 09 00 - HVAC Instrumentation and Controls.
5. Section 23 07 00 - HVAC Insulation.
6. Section 23 31 13 - Metal Ductwork
7. This section is a part of each Division 23 Section.
8. Division 26 - Electrical.

#### 1.3 REFERENCES

A. SMACNA.

B. ASHRAE.

C. NFPA.

#### 1.4 QUALITY ASSURANCE

A. Qualify welding processes and welding operators in accordance with AWS.D1.1 "Structural Welding Code - Steel" for hangers and supports and SWS.D9.1 "Sheet Metal Welding Code."

B. Qualify each welder in accordance with AWS qualification tests for welding processes involved. Certify that their qualification is current.

C. NFPA Compliance: Comply with the following NFPA Standards:

1. NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems," except as indicated otherwise.

2. NFPA 96, "Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors for Commercial Cooking Equipment," Chapter 3, "Duct System," for kitchen hood duct systems, except as indicated otherwise.

D. SMACNA - HVAC Duct Construction Standards, Latest Edition.

E. The contractor must comply with the specification in its entirety.

F. At the discretion of the Commissioner, sheet metal gauges, reinforcing and dampers may be checked at various times to verify all duct construction is in compliance. If on inspections, changes have been made without prior approval, the contractor will make the applicable changes to comply with this specification, at the contractor's expense.

#### 1.5 SEISMIC DESIGN

A. This project is located within a seismic zone requiring special provisions for the support and restraint of equipment, components and piping. See Section 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).

#### 1.6 SUBMITTALS

A. Submit product data under provisions of Section 23 05 00.

B. Include product description, list of materials for each service, and locations.

C. Product data including details of construction relative to materials, performance data (including pressure drops), dimensions of individual components and profiles for the following items:

1. Dampers.

2. Indicate the location and rating of all dampers on shop drawings and submittals.

3. Include damper manufacturer's installation instructions as part of the damper submittal. These instructions shall describe the applicable requirements for damper sleeve thickness; retaining angles; sealing; duct-to sleeve connections; preparation of wall, floor or ceiling openings; and other requirements to provide an installation equivalent to that tested by the damper manufacturer during the UL 555, UL 555S and UL 555C qualification procedures. Detail any proposed installations that deviate from these manufacturer's instructions and explain the needed deviations. Fire and smoke damper installations shall comply with the manufacturer's instructions. Any submitted deviations must be approved by the appropriate authority having jurisdiction.
- D. Maintenance data for dampers, fire dampers, and smoke dampers, in accordance with Division 23 Section "Basic Mechanical Requirements" and Division 01.

## 1.7 DEFINITIONS

- A. Sealing Requirements Definitions: For the purposes of duct systems sealing requirements specified in this Section, the following definitions apply.
1. Seams: A seam is defined as jointing of two longitudinally (in the direction of airflow) oriented edges of duct surface material occurring between two joints. All other duct surface connections made on the perimeter are deemed to be joints.
  2. Joints: Joints include girth joints, branch and subbranch intersections; so-called duct collar tap-ins; fitting subsections, louver and air terminal connection to ducts; access door and access panel frames and jambs; duct, plenum and casing abutments to building structures.

## PART 2 - PRODUCTS

### 2.1 DAMPERS - GENERAL

- A. All dampers shall be furnished installed by the mechanical contractor.
- B. Dampers of all ratings and types shall be of the nominal 100% face area type, with blade package and frame components out of the airstream. These dampers shall include the required oversize enclosures that shall be sealed by the damper manufacturer for the appropriate duct pressure class into which they are installed. Such dampers shall have appropriate rectangular, duct collars to facilitate connection of mating ductwork. The Contractor shall be responsible for any additional sealing of duct collars and connections required to maintain the duct seal class requirements, but shall not jeopardize the UL breakaway connection.
- C. All dampers are to be selected and installed with duct transitions so that the damper clear open area (including frames, stops, etc.), equals to or exceeds the connecting duct (inlet and outlet) clear open area (duct clear inside dimensions). The mechanical contractor shall provide the required duct transitions.
- D. Dampers shall be installed per the condition of their UL listing and the manufacturer's installation instruction.

- E. Damper shall be in accordance, UL 555S (Latest Edition) and all requirements of local authorities having jurisdiction and shall have UL label.
- F. Fire damper sleeves shall not extend more than 6" beyond the fire wall or partition and not more than 16" on the operator/actuator side.
- G. Contractor shall submit static pressure loss thru damper at operating duct velocities.
- H. Provide access doors as per code and specifications.
- I. The mechanical contractor shall furnish damper actuators for all dampers that he furnishes. Where practical, actuators shall be factory mounted by the damper manufacturer. The actuators shall be located outside of the airstream.
- J. Wiring for motor operated dampers shall be done by this contractor.

## 2.2 DAMPERS FOR BALANCING

- A. Provide manual dampers for balancing the air systems.
- B. Construction shall conform to latest SMACNA standards. When installing dampers in ducts to be insulated provide raised bracket for damper quadrant with height equal to insulation thickness.
- C. If location of balancing dampers is not defined on the drawings the following minimum standards shall govern:
  - 1. All supply & return air main branches from trunk, and all sub branches from mains shall have balancing dampers.
  - 2. Locate damper as far as possible from air outlet to avoid noise transmission.
- D. Coordinate with G.C. for easy access to damper.
- E. For inaccessible ceilings, as well as for specialty areas such as lobbies, etc., furnish remote damper actuator operable through face of nearest diffuser. Damper controller and cable shall be concealed above the ceiling. Similar to Bowden remote cable control system with Young regulator damper controllers. Balancing dampers shall include all necessary hardware to ensure compatibility with remote cable control system.

## 2.3 PRESSURE SENSITIVE BACKDRAFT DAMPER

- A. Backdraft Dampers - Provide as sized in drawings. Based on Arrow Louver & Damper Model 366 Potteroff louver and damper models BD-64, BD-84, with adjustable counterbalance mounted internally on blades, or approved equal.
- B. Frames - Extruded Aluminum 6063-T5 Alloy .081 B & S Ga., 1" x 4" x 1" Channel with gasketing on all four sides.
- C. Blades - Extruded Aluminum 6063-T5 Alloy .081 B & S Ga. contoured for strength and overlap edges with gaskets to insure low leakage.



- D. Shafts - 1/2" dia. Extruded Aluminum - Pinlock Design.
- E. Seals - Extruded Interlocked Silicone Rubber Seals on blade edges and expanded polyurethane on frame.
- F. Linkage - Cadmium plated steel mounted on blades.
- G. Screen - 1/2" Aluminum Bird Screen in "U" frame to be removable on both sides of unit, as required.
- H. Balances:
  - 1. Removable fixed weights on blades and adjustable counterweights for finite adjustments in field by this trade.
  - 2. Fixed weights and adjustable counterbalance weights shall be installed to resist opening. Fixed weights and adjustable counterbalance weights are to be able to be removed from upstream of damper. All weight, fixed and adjustable counterbalance, can be on the exterior of damper frame. Finite adjustments allowed in field by this trade.
- I. Housing - 16 Ga. Galvanized Metal Sleeve.

#### 2.4 DAMPERS FOR FIRE PROTECTION

- A. Dampers and doors for fire protection shall be identified by the use of the symbol FLD on the drawings. Note that the use of the symbol FLD implies the provision of access doors. For installation in 1-1/2 Hr. or 2 Hr. fire separations or fire divisions provide 1-1/2 hour fusible link fire dampers U.L. labeled for use in Class B openings. For installation in 3 or 4 hour fire separations or fire divisions provide two fire dampers in series U.L. labeled for use in Class A openings, or other UL classified damper rated for 3 hrs.

#### 2.5 FUSIBLE LINK DAMPERS (FLD)

- A. Fusible Link Dampers and Fire Doors shall be installed where shown in the drawings and where required by code, and shall be of the folding blade type, Fire/Seal as manufactured by Air Balance, Inc., and shall bear the Underwriters' Laboratory label. Type "B" or "C" mountings shall be used for all installations, frames and blades are to be outside of airstream. Type "A" mountings are not permitted. Horizontally mounted dampers shall be operated by stainless steel negotiator springs with locking devices to insure positive closure. Fire damper shall meet the requirements of latest N.F.P.A. Bulletin #90A, and shall be tested in accordance with U.L. 555 test criteria for fire, corrosion and dust loading, labeled and listed by Underwriters' Laboratories. Dampers of other manufacturers may be approved subject to proper submission of Underwriters acceptance plus pressure drop calculations.
- B. Local codes shall take precedence where they supercede NFPA. However, the Contractor shall notify the Commissioner in writing citing such differences by reference to such codes should the contract documents not reflect these differences.
- C. FLD's shall be provided as follows:

1. At each penetration of a vertical shaft. On upflow exhaust ducts where permitted by Code, a 22" long internal boot may be used after approval of duct pressure drop calculation.
2. At each fireproof slab penetration where there is no vertical fireproof shaft.
3. At each penetration of a required fire separation or fire division.
4. At each penetration of a required fire rated corridor or ceiling.

D. General:

1. Units should be Board of Standards & Appeals Approved type for use in New York City.
2. Units shall be approved for use by the authorities having jurisdiction.
3. The Contractor shall clearly indicate location of units on shop drawings and shall provide access doors in the ducts at each damper of sufficient size and type to permit inspection and replacement of linkage. Provide itemized list of fire dampers for inspection and for posting in Engineers office. It shall be the Contractor's responsibility to coordinate all locations of duct access doors.
4. Access doors shall be cam latched with vinyl gasket to provide tightest possible seal between the duct and frame. Doors shall be self-tightening and gasketed with hand operated cam locks and will be fully insulated. Access doors shall be Air Balance, Inc. Fire/Seal or approved equal.
5. Comply with U.L. recommendations for break away connections at maximum distance of 6" from wall, and all other U.L. recommendations and local code requirements. Retaining angles must be wide enough to have sufficient bearing on wall (minimum surface contact of 1").
6. Damper blades and frame shall be outside of airstream, to provide a nominal 100% free area dampers.

2.6 AUTOMATICALLY CONTROLLED DAMPERS

- A. This shall provide all automatic control dampers which do not have either a fire and/or smoke rating.
- B. Dampers shall be of the louver type with neoprene or vinyl edged blades and end seals.
- C. Maximum air leakage per AMCA rating shall be 3 CFM/sq. ft. at 3.0" SP.
- D. Maximum pressure drop with the damper open (AMCA rating) shall be 0.05" at 150° FPM air velocity.
- E. Louver blades shall be #16 gauge galvanized steel, maximum 8" in width.

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- F. Frames shall be minimum 4" reinforced flat galvanized steel with welded corners and stiffening and provisions for end seals.
- G. All rods shall be non-corrosive material with provision for positive interlocking of blades and actuators on the shaft.
- H. All bearings shall be nylon or Teflon.
- I. All hardware shall be of non-corrosive material.
- J. Two position dampers may be of the parallel-blade type. Modulating dampers shall be of the opposed-blade type.
- K. Provide solid stops on all sides of the frames against which the louver shall close in order to provide maximum 2% leakage at 5" static pressure.
- L. Automatic damper actuators shall be limited to a minimum of one every sixty square feet for two-position type and one every forty square feet for modulating type.
- M. Automatic dampers exposed to outside air shall be of aluminum construction.

2.7 MISCELLANEOUS

- A. Where fire dampers, automatic dampers or fire dampers are shown on drawings or are required, their selection shall be made so that the frames, stops, etc. of such dampers are outside of the airstream so as to provide a nominal 100% free area damper.
- B. Furnish and install manual dampers, fire dampers, registers, grilles, register boxes, access doors, sound traps, etc., as described elsewhere in the specifications and as required for a complete system, ready for operation.

PART 3 - EXECUTION

NOT APPLICABLE.

END OF SECTION 23 33 13

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**SECTION 23 51 00 - BREECHINGS, CHIMNEYS AND STACKS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. This section includes the following:
  - 1. Prefabricated Stack and Breeching
  - 2. Double Wall Stack and Breeching

**1.2 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Section 23 05 00 - Common Work Results for HVAC.
  - 2. Section 23 05 50 - Basic Mechanical Materials and Methods.
  - 3. Section 23 07 00 - HVAC Insulation.
  - 4. Section 23 09 10 - Special Mechanical Systems.
  - 5. Section 23 52 00 - Heat Generation.
  - 6. This Section is a part of each Division 23.
  - 7. Division 26 Electrical.

**1.3 SUBMITTALS**

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product data for each type of product specified. Include materials, dimensions, weights, and accessories.
- C. Shop drawings detailing fabrication and installation of breechings and stacks, including plans, elevations, sections, details of components, and attachments to other construction elements. Detail connections to equipment.
- D. Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.
- E. Engineering report certifying that stacks meet the design wind and seismic loads.

- F. Maintenance data for vent fans to include in the operation and maintenance manual specified in Division 01.
- G. As specified herein.

#### 1.4 QUALITY ASSURANCE

- A. Breeching, Chimneys and Stacks shall meet the seismic design requirements as outlined under another section of this work.
- B. Welder Qualifications: Certified according to AWS D9.1.
- C. Manufacturer Qualifications: Firm experienced in manufacturing breechings, chimneys, and stacks similar to those indicated for this Project and that have a record of successful in-service performance.
- D. Comply with NFPA 211 for components and installation.
- E. Comply with SMACNA "HVAC Duct Construction Standards, Metal and Flexible" for fabricated breechings.
- F. Comply with SMACNA "Guide for Steel Stack Design and Construction."
- G. Comply with AWS D1.1 for welder qualifications, welding details, and workmanship standards.
- H. Comply with ASHRAE "Systems and Equipment Handbook", Chapter 31 for "Chimney, Gas Vent, and Fireplace Systems," for material requirements and design criteria.
- I. UL Listing and Labeling: Provide products specified in this Section that are UL listed and labeled.
- J. Structural Steel - ASTM - A36 (36,000 PSI Min.) American Institute of Steel Construction.
- K. Light Gauge Sheet - ASTM A570-30 (30,000 PSI Min.)
- L. Concrete - 3000 PSI (Min.) American Concrete Institute Specifications.
- M. Anchor Bolts - ASTM A-307 (Min.)
- N. Refractory - UL959
- O. Single-Source Responsibility: Obtain all system components from 1 source and by a single manufacturer.

#### 1.5 SEISMIC DESIGN

- A. This project is located within a seismic zone requiring special provisions for the support and restraint of equipment, components and piping. See 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design) for additional requirements.

## PART 2 - PRODUCTS

### 2.1 PREFABRICATED STACK & BREECHINGS

- A. Boiler stack & breechings shall be a prefabricated sectional type listed by Underwriters Laboratories, Inc. as manufactured:
  - 1. Van-Packer Company, Inc.
  - 2. Schebler Chimney Systems
  - 3. Selkirk
  - 4. Or Approved.
- B. The manufacturer shall furnish all items which form a part of the assembly, including cleanout section, tee section, straight sections, elbows, expansion joints, boiler adapter kits, guybands, flashing, counter flashing, and insulated thimble where required. Each section shall bear the factory applied Underwriters Laboratories label.
- C. In addition, manufacturer shall furnish all items which form a part of the breeching assembly, including sections with cleanout and access doors, tee sections, straight sections, expansion joints, increasers, elbows, hanger bands, end caps and sample ports.
- D. Each stack section shall be up to 4 ft. in length with an insulating refractory wall encased in an 11 gage galvanized steel jacket with welded seams. Insulating refractory shall be flush and square with ends of jacket to insure 100% bearing surface between sections after erection. Insulating refractory shall be suitable for high incinerator exit temperatures and shall be centrifugally spun into the metal jacket. Slumped or poured mix is not acceptable.
- E. Stack sections shall be circular with diameter as shown on drawing.
- F. Assembly shall be made by joining stack sections with high temperature joint cement and covering joint with aluminized steel joint bands by stack manufacturer. Total height shall be as shown on drawings, with lateral and/or vertical bracing and support as recommended by the stack manufacturer.
- G. A Barometric Damper shall be installed as required by the stack manufacturer.
- H. An insulated thimble supplied by the stack manufacturer shall be installed wherever the stack passes through roof of combustible material with flashing and counter flashing as required.
- I. Tee sections shall be required height and shall have a 6" refractory projection for the breeching condition.
- J. Cleanout door sections shall be provided at the heel of the stack and at 15' maximum intervals in horizontal breeching.

- K. Installation shall be made in accordance with the Manufacturer's recommendation and in compliance with the Underwriters Laboratories, Inc. listing.

## 2.2 DOUBLE WALL BOILER BREECHING SYSTEMS

- A. This factory built modular breeching shall be laboratory tested and listed for pressure capabilities by Underwriters Laboratories, for use with building heating equipment (boiler, gas fired chiller/boiler, etc.) burning gas, solid or liquid fuels as described in NFPA 211, which produce exhaust flue gases at a temperature not exceeding 1400 degrees under continuous operating conditions. The breeching shall be sealed and pressure tight at the operating pressures of the boiler outlet. Double wall vent system shall be manufactured by Selkirk-Metalbestos System IPS pressurized system or approved equal.
- B. The double wall breeching shall have an inner gas carrying pipe of type 304 stainless steel. The inner wall shall be .305" nominal thickness. The outer jacket shall be stainless steel. A 24" thickness of factory applied insulation shall occupy the space between the inner and outer walls, of the entire section of the breeching (whether exposed or concealed), to maintain a surface temperature which shall not be injurious.
- C. Venting system shall be listed by Underwriters Laboratories, Inc. (UL) as a chimney determined suitable for 60" W.C. positive pressure, based upon compliance with the construction requirements and "Positive Pressure Applications Test" protocol described in Par. 9.7 and section 22A, respectively, of the Standard for Factory- Built Chimneys, ANSI/UL103. Compliance with such standard/specification shall be confirmed by a statement on the safety certification label attached to the product indicating "Suitable for positive pressure venting applications with maximum 60" water column internal static pressure at 1000°F, or equivalent.
- D. The breeching shall be installed according to the manufacturer's installation instructions and with local State requirements.
- E. Breeching shall contain cleanout elements and doors as required by the local D.E.P. at 15' maximum intervals in horizontal breeching, at the heel of the stack, or whichever is more stringent. Total height shall be as shown on drawings, with lateral and/or vertical support as recommended by the stack manufacturer. Installation of the smoke stack shall be made in accordance with specifications of Underwriter's Laboratories, Inc., and the manufacturer. Tee sections shall be required height and shall have a 6" refractory projection for the breeching condition.
- F. Inner pipe joints shall be sealed by use of V Bands and RTV Silicone Sealant.
- G. An insulated thimble supplied by the stack manufacturer shall be installed wherever the stack passes through roof of combustible material with flashing and counter flashing as required.
- H. The breeching will serve two forced draft boilers. Sequential dampers shall be installed in the flue gas outlet for each of the boilers and electrical draft control systems shall actuate each of the boiler outlet dampers.



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- I. The entire breeching from each boiler to the termination shall be from one manufacturer. The boilers shall discharge to a common breeching. Sequencing dampers shall be factory installed in the breeching by the manufacturer.
- J. The breeching shall be warranted against functional failure due to defects in material and workmanship for a period of ten (10) years from date of delivery. Functional failure is defined as any failure of the system or a component to perform its intended function without adverse leakage. During this period any defective system or component shall be repaired or replaced. The following are required by the contractor.
  - 1. Shop drawings showing the actual layout (fully coordinated with all trades) and drawn to scale shall be provided by the manufacturer. The system shall be installed as designed by the manufacturer and in accordance with the terms of the manufacturer's 10-year warranty.
  - 2. The inner diameter for breeching shall be calculated by the manufacturer. The computer program utilized by the manufacturer shall be technically sound, shall follow ASHRAE calculation methods, and incorporate the specific flow characteristics of the inner pipe. The contractor shall furnish the exact boiler and chiller/boiler model and operating characteristics to the factory representative. Operating characteristics shall include flue gas flow rate, temperature, pressure capabilities, velocity and available external static pressure at boiler (chiller) outlet, at maximum and minimum levels of burner turndown range. Submit calculations as part of the shop drawing submission.
- K. Technical Services: The factory-built breeching system shall be furnished, and coordinated, by a vendor organization which specializes in the application of packaged boiler systems, to assure design, installation and service coordination, and to provide in-warranty and post-warranty unified responsibility for Commissioner, architect, consulting engineer, and contractor.
- L. Breeching vendor organization shall obtain boiler (gas fired chiller) operating characteristics for the manufacturer as input for developing system configuration and parameters. Vendor shall submit detailed breeching design diagrams to architect, and shall provide periodic supervision of the installation by the contractor.
- M. Vendor shall provide inspection report to the architect, after completion of installation, certifying proper installation and condition of breeching and stack system.
- N. Only manufacturers meeting the latest U.L. positive pressure capabilities shall be accepted.
- O. The installed system shall include one (1) explosion relief valve per NFPA.

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### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions, and in compliance with the UL listing.
- B. Grounding shall be accomplished by providing pads at the stack base for attachment of grounding cables (per NFPA 78). Grounding system to be provided by this contractor.

#### 3.2 SCHEDULE

- A. As described under "Products".

END OF SECTION 23 51 00

## SECTION 23 52 00 - HEAT GENERATION

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes packaged, factory-assembled, fuel fired boilers and accessories utilized for heating systems.

#### 1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 23 05 00, Common Work Results for HVAC.
- C. Section 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).
- D. Section 23 05 15, Variable Frequency Controllers.
- E. Section 23 05 50, Basic Mechanical Materials and Methods.
- F. Section 23 11 13, Fuel Oil System Piping & Storage Tanks.
- G. Section 23 51 00, Breechings, Chimneys & Stacks.
- H. This section is a part of each Division 23.

#### 1.3 REFERENCES

- A. ASME.
- B. ANSI.
- C. NFPA.

#### 1.4 QUALITY ASSURANCE

- A. Applicator: Company specializing in boiler plants with three years minimum experience.

#### 1.5 SEISMIC DESIGN

- A. This project is located within a seismic zone requiring special provisions for the support and restraint of equipment, components and piping. See 23 05 48, Foundations, Vibration Isolation, & Supports For Rigidly Supported Equipment (Seismic Design).

## 1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data, including rated capacities of selected model, weights (shipping, installed and operating), installation and start-up instructions, and furnished accessory information.
- B. Shop Drawings: Submit manufacturer's end assembly drawings indicating dimensions, connection locations, and clearance requirements.
- C. Wiring Diagrams: Submit manufacturer's electrical requirements for the boiler including 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.

## 1.7 WARRANTY

- A. All equipment is to be guaranteed against defects in material and/or workmanship for a period of 12 months from the date of start-up or 18 months from the date of shipment, whichever comes first.
- B. The boiler pressure vessel shall be warranted against damage resulting from thermal stress for a period of 20 years from date of shipment provided the boiler is operated and maintained in accordance with the conditions specified in the manufacturer's Operator and Maintenance Manual.

## PART 2 - PRODUCTS

### 2.1 BOILER PLANT

- A. Boiler plant will consist of two low pressure steam boilers suitable to operate on #2 fuel oil or natural gas.

### 2.2 GENERAL DESIGN

- A. The boiler shall be manufactured by:
  - 1. Cleaver Brooks
  - 2. Weil McLain
  - 3. Smith
  - 4. Raycon
  - 5. Or Approved Equal.
- B. The boiler shall be of a two-drum flexible watertube design with a tangent tube water-wall furnace mounted on a heavy steel frame. Top, bottom and sides of the furnace shall be water cooled.

- C. The boiler pressure vessel shall be constructed in accordance with ASME Boiler Code, and must receive authorized boiler inspection prior to shipment. A copy of the inspection report shall be furnished to the purchaser. The complete packaged boiler - burner unit shall be listed by Underwriters Laboratories', and shall have the UL/cUL label affixed to the front head.
1. The boiler drums shall be furnished with hand holes to facilitate boiler inspection and cleaning.
  2. Boiler tubes shall be 1.5" diameter, 0.095" wall thickness, and shall be easy to remove and replace without expanding or welding the tube attachment to the drums.
  3. The boiler shall have sufficiently sized downcomers to provide positive natural internal circulation.
  4. The burner shall be mounted on a hinged backing plate for easy access to furnace.
- D. Observation ports for the inspection of flame conditions shall be provided at rear end of the boiler and in the burner assembly at the front end.
- E. The tangent wall tubes shall be covered with 1-1/2 inches of insulation under a gas-tight, 16-gauge inner casing. There shall be 2 inches of insulation between the inner and outer casing. The outer casing shall be 20 gauge. The boiler base frame and other components shall be factory-painted before shipment, using a hard enamel finish.

### 2.3 STEAM BOILER TRIM

- A. The following items shall be installed on the boiler:
1. Low Water Cutoff – A low water cut-off control of the float-type shall be mounted in a water column to the upper drum. It is to be wired to the burner control circuit to prevent burner operation if the boiler water falls below proper levels.
  2. Feedwater Pump Control – The boiler feedwater pump control switch shall be included. It shall provide automatic actuation of a motor-driven feedwater pump, or solenoid valve, to maintain the boiler water level within normal limits.
  3. Steam Pressure Controls – A minimum of three controls shall be provided: one auto reset type for burner on-off control, one for burner firing rate, and one manual reset type for burner cutout in excessive steam pressure conditions.
  4. A pressure gauge shall be mounted to the boiler.
  5. Pressure controls (for regulation of burner operation) shall be mounted to the boiler.
  6. Steam relief valves shall be of a type and size to comply with ASME Code requirements (shipped loose).

#### 2.4 BURNER AND CONTROLS

- A. The boiler shall be provided with a UL/cUL approved fuel burning system in full accordance with the requirements of state, provincial and local codes, the local gas utility, and other applicable regulatory bodies.
- B. The complete fuel burning system shall further be in full accordance with Factory Mutual (FM) requirements.

#### 2.5 BURNER DESCRIPTION

- A. The burner shall include a combination gas-oil burner having rated capacity to burn natural gas and #2 fuel oil.
- B. The burner shall be forced draft type with full firing rate modulation. All combustion air shall be furnished by the burner fan, which shall be an integral part of the burner.
- C. The gas-oil burner shall burn the specified quantity of fuel without objectionable vibration, noise, or pulsation, with not more than 15% excess air and less than 100 ppm (corrected to 3% O<sub>2</sub>) CO in the products of combustion on oil firing, and a maximum of No. 1 smoke, as measured on the Bacharach Scale when burning oil. In addition, when firing gas, the burner shall be guaranteed to produce less than 60 ppm (corrected to 3% O<sub>2</sub>) NO<sub>x</sub> emissions.
- D. Primary-secondary air control shall be a design function of the combustion head. Combustion heads requiring an internal adjustment shall not be acceptable.
- E. The burner shall be equipped with an aluminum reverse curve fan for lower fan motor horse power requirements and self-cleaning characteristics.
- F. A permanent observation port shall be provided in the burner to allow observation of both the pilot and main flame. Both the pilot and the flame scanner shall be easily accessible without opening or disassembling the burner.
- G. Supply voltage available shall be as scheduled. All motors shall be suitable for use on this voltage. All burner controls are to be for use on 120 volts, 1 phase, 60 Hz.
- H. The burner shall be factory fire-tested to ensure proper operation before shipment.

#### 2.6 PILOT GAS TRAIN FOR GAS BURNER (MOUNTED, PIPED, AND WIRED)

- A. A separate pilot gas cock, gas pressure regulator with vent snubber, and pilot safety shutoff gas valve shall be provided for the ignition gas supply.

#### 2.7 OIL BURNER

- A. The oil burner shall be of the mechanical pressure atomizing type.
- B. The oil burner shall be lit via direct spark ignition. No gas pilot shall be required.
- C. A two-stage oil pump shall be provided for each burner as an integral part of the burner.

- D. Two approved automatically operated safety shutoff valve(s) shall be provided in the oil supply line to the burner valves to be piped in series but wired parallel.
- E. Supply an oil pressure gauge to indicate the discharge oil pump pressure.
- F. Install a manual valve, fuel oil filter, or strainer and vacuum gauge on the suction side of the oil pump.
- G. Oil pressure monitoring shall be provided by an approved pressure switch interlocked to accomplish a non-recycling safety shutdown in the event of low oil pressure.

#### 2.8 GAS VALVE TRAIN FOR EACH BURNER

- A. Provide a pressure gauge to indicate the gas burner manifold pressure.
- B. Furnish and install one manually operated ball valve upstream of all valves.
- C. Provide one main gas pressure regulating, automatically operated motorized safety gas valve.
- D. Provide a second automatically operated gas safety shutoff valve to operate simultaneously with the above gas valve.
- E. One safety shutoff valve shall be proven closed during pre- ignition by proof of valve closure interlock switch on valve.
- F. A manually operated gas valve shall be located downstream of both automatic gas valves to permit leakage testing of the valves.
- G. Gas pressure monitoring shall be provided by approved pressure switches interlocked to accomplish a non-recycling safety shutdown in the event of either high or low gas pressure.
- H. The gas train is to be vent-less so as no vents are required to the outdoors.

#### 2.9 BURNER CONTROLS

- A. The full modulation of the burner shall be controlled by steam pressure by means of a pressure control.
- B. An additional high limit safety pressure control of the manual reset type shall be provided to control the burner.
- C. Pre-purge and post-purge operation of the burner fan shall be provided per current UL/cUL requirements.
- D. The burner shall utilize a CB780E type flame safeguard programmer incorporating LED indicator lights to annunciate the current operating status of the burner.
- E. A manual restart of the burner shall be necessary in the event of shutdown due to flame failure.

- F. All three-phase motors shall be controlled and protected by an automatic starter with thermal overload protection. The starter shall be inter-locked to prevent burner operation when overload relays are tripped out.
- G. Supply a burner-mounted diaphragm air flow switch to prevent the main fuel valves from energizing in the event of insufficient combustion air, or to provide safety shutdown in the event of combustion air interruption.
- H. A factory-wired control cabinet shall be supplied and mounted on the burner. The control cabinet shall house the flame safeguard control, programming timer, burner motor starter, fuses, control circuit transformer, control switches, indicating lamps and relays as required.
- I. Provide four individual lights with nameplates on the control cabinet to indicate "call for heat," "main fuel valve on," "low water," and "main flame failure."
- J. Changing from one fuel to the other shall be automatically controlled by an external contact closure. No burner adjustment shall be required to switch from one fuel to the other.
- K. The burner shall be equipped with suitable fuel and air controls to assure smooth main flame ignition. The burner shall utilize a proportional air flow damper design, including independent low-fire and high-fire air flow shutter assemblies for ease of adjustment and consistent excess air performance throughout the firing range.
- L. Fuel-air control shall be synchronized. The fuel air drive unit shall be provided with a position indicating switch interlocked with the flame safeguard system to assure starting at the low fire position. The flame safeguard system shall further program this drive unit to provide a full open louver of sufficient time to provide a four air change pre-ignition of the combustion chamber, heat exchanger, and flue passages.
- M. Pre-ignition pure air flow rate shall not be less than 60% maximum firing rate air flow. Interlocks shall be provided to monitor and prove 60% air flow purge when air inlet louvers are automatically opened to obtain this rate.
- N. Full modulation of fuel input shall be provided. A modulating pressure control shall be supplied to modulate a burner mounted damper motor controlling both fuel and air supply by means of parallel positioning fuel air control.
- O. Electronic safety combustion controls shall be supplied, complete with ultra-violet flame scanner to monitor the pilot and main flame. It shall be so utilized as to provide intermittent type gas-electric ignition and pre-ignition timer. Flame rod will not be permitted for proving pilot or main flame.

NOTE: The following active band sound pressure level must be maintained at a distance of 5 ft from exhaust flues on all sides.

**Maximum Allowable Octave Band Sound Pressure Levels, Exhaust**

Distance	31.5	63	125	250	500	1000	2000	4000	8000	dBA
5 ft	90	81	73	66	60	66	54	53	52	65

\*Sound pressure levels reported in dB re:  $\mu$ Pa, unless otherwise noted.



## 2.10 STEAM BOILER LEAD/LAG CONTROLS

- A. The steam boilers shall be equipped with a lead/lag controller.
- B. When multiple boilers are installed in a common steam system, a boiler lead/lag sequencing control shall be provided. The boiler manufacturer shall provide the controller to ensure proper integration. Furnish and install steam boiler lead/lag control system which is pre-engineered and programmed exclusively for the operation of multiple modulating steam boilers.
- C. The control shall be capable of controlling up to four modulating boilers without any additional hardware and up to 20 boilers using external extension modules. The control shall have four normally open relay contacts that can be used to start/stop each burner. The control shall have four modulating outputs. The control shall have the capability to operate modules having 0 – 5 volts, 1 - 5volts, 0 – 10 volts, 2 - 10 volts, 4 – 20 ma, and 135-ohm outputs. The control shall be capable of identifying the output module types and adjusting control output accordingly.
- D. The control shall come complete with a System Pressure Sensor which shall be of the Transducer type capable of measuring between 0-30PSI.
- E. Sequence of Operation: When a request for steam is received at the controller (i.e. steam header pressure is low), the control PID shall activate the lead boiler and start its pre-purge cycle followed by the initiation of modulation at the Fire Start Percent. If the steam header pressure is still not satisfied, the control shall start to increase modulation until the Modulation Start percent has been reached. That shall be followed by the lag boiler pre-purge cycle. Then, the lag boiler shall remain at the Fire Start percent and the lead boiler shall resume its modulation until it reaches full fire (100% modulation). Any additional requirements for heat shall trigger the control to increase the lag boiler. When the control PID requires reduced output, the control shall reduce the modulation of the lag boiler until it reaches its Fire Start percent. That shall be followed by the reduction of modulation of the lead boiler until it reaches 40% percent of its Modulation Start percent. This shall trigger the control to turn off the lag boiler.
- F. The control shall be capable of communication with a Building Management System (BMS) via a number of protocol languages; BACnet IP, BACnet MSTP, MODBUS RTU, LonWorks. The communication protocol is to be as scheduled and shown on the contract drawings.

## 2.11 BOILER FEED SET

- A. The boiler feed set shall be manufactured by:
  - 1. BFS Industries.
  - 2. ITT
  - 3. Armstrong
  - 4. Dunham Bush
  - 5. Or Approved Equal.

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- B. Furnish and install a packaged boiler feed set as depicted on the contract drawings and schedules. The manufacturer shall have been successfully producing like equipment for a minimum period of 3 years. The feed set shall consist of the following major components:
1. Welded steel receiver
  2. Structural steel frame with tank supports
  3. Electric motor operated boiler feed pumps
  4. Electric control center system
  5. All necessary piping, valves, fittings and wiring to form a complete package
- C. The horizontal feedwater storage tank shall be of a capacity as shown the contract drawings. The tank will be non-code, welded carbon steel with a minimum allowable thickness of 3/8".
- D. The tank shall be complete with a posi-vent safety system, stainless steel trimmed fluid stabilizer and saddles bolted to supports for each in replacement. Supports welded directly to the tank are not acceptable. The tank support stand shall be a minimum 5 ft tall to provide the required net positive suction head for the feed water pumps.
- E. The following tank accessories shall be provided:
1. Complete water glass gauge with brass shut off cocks and drain.
  2. Stainless steel, dial type, tank thermometer
  3. Float switch and solenoid valve for make-up water
  4. Low level alarm and pump cutoff switch
  5. Hand hole for tank access
  6. Magnesium anode (sacrificial rod with weep hole to signal when it is spent)
  7. Chemical injection port with stainless steel injection quill
- F. Boiler feed pumps shall be provided in an N+1 configuration where N is the numbers boilers and the +1 is for backup. The boiler feed pumps shall be stainless fitted, centrifugal pumps equipped with high temperature mechanical seals. Each pump shall be close coupled to a 1750 rpm TEFC energy efficient motor.
- G. Pump suction piping shall be provided by the boiler feed system manufacture and shall be sized in accordance with good piping practice to the actual flow (no pump port size). The maximum frictional loss will be no more than 7' per 100' of pipe using Hazen and Williams formula where "C" = 100. Suction piping will consist of a gate valve, expansion coupling, Y-type strainers, and all interconnecting pipe and fittings.
- H. Pump discharge piping shall be included for each pump with a gate valve, check valve, and pressure gauge with shut-off cock.

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- I. The tank shall be supplied with a pre-heater complete with temperature regulating valve and tank mounted stem injection heater. The tank preheater shall be supplied with a 3-valve bypass complete with gate isolation valves, globe valve, y-strainer, and inlet pressure gauge.
- J. Furnish a NEMA 1 control panel complete with control circuit transformer, low water pump cutoff circuit, alarm horn, lights, and silence switch. The control panel shall also include magnetic across-the-line motor starters, three phase protection, hand-off-auto switches, running light, and fuse block per pump.
- K. Warranty: The packaged boiler fee system will be warranted for 1 year from the date of startup or 18 months from date of shipment.

## 2.12 BLOWDOWN SEPARATOR

- A. Furnish and install a blowdown separator sized for the boiler capacity as scheduled and shown on the contract drawings.
- B. The separator shall be manufactured in accordance with ASME Code. The separator shall be provided with a National Board stamping.
- C. The separator shall include a stainless steel striking plate at the point of inlet impingement. The separator shall be furnished with screwed and 150# flanged connections.
- D. The separator shall be provided with an automatic drain water after-cooler complete with the following:
  - 1. Thermostatically activated temperature regulating valve to automatically control the flow of cold water by responding to temperature changes sensed in the bulb.
  - 2. A bi-metal thermometer with necessary adaptor bushings.
  - 3. A cast iron strainer with 0.045 stainless steel screen ahead of the temperature regulating valve to protect against foreign mater.
- E. The separator shall come complete with a floor stand.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Equipment and materials shall be installed in an approved manner and in accordance with the boiler manufacturers' installation requirements.
- B. The installer shall construct a level continuous concrete pad (min. 3 1/2 inches high) for the entire boiler system according to the boiler manufacturer's erecting instructions.
- C. Assemble unit sections and parts shipped loose or unassembled for shipment purposes. Follow manufacturer's installation recommendations and instructions.
- D. Install electrical control items furnished by manufacturer per wiring diagram provided by manufacturer.

- E. Complete water and steam piping installation as required by manufacturer for operation of system.
- F. Provide air intake and exhaust piping, size and type as recommended by the manufacturer.

### 3.2 FIELD QUALITY CONTROL

- A. After boiler installation is completed, the manufacturer shall provide the services of a field representative for starting the unit and training the operator.
- B. Arrange with National Board of Boiler and Pressure Vessel Inspectors for inspection of boilers and piping. Obtain certification for completed boiler units, deliver to Commissioner, and obtain receipt.

### 3.3 COMMERCIAL BOILER TECHNICAL SERVICES

- A. Major elements of the packaged boiler system shall be furnished by a single vendor to assure design installation and service interface, and to provide in-warranty and post-warranty unified responsibility for Commissioner and consulting engineer.
- B. System vendor shall coordinate product data presented by boiler manufacturer, to provide comprehensive set of interfaced drawings which will serve as the basis for system evaluation by consulting engineer and installation by mechanical contractor selected by Commissioner.
- C. Package boiler system vendor shall provide periodic supervision of installation for Commissioner's contractor, startup and adjustment of system elements, instruction of Commissioner's operating personnel and one year in-warranty service after startup.
- D. Package boiler system vendor service organization shall employ senior service technicians, having experience in all aspects of trouble shooting, corrective service, preventive maintenance and O&M reporting.

END OF SECTION 23 52 00

SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
  - 1. Submittals.
  - 2. Coordination drawings.
  - 3. Record documents.
  - 4. Maintenance manuals.
  - 5. Rough-ins.
  - 6. Electrical installations.
  - 7. Cutting and patching.
  - 8. Codes, Permits and Inspections.
  - 9. Separation of Work Between Trades.
  - 10. Definitions and Interpretations.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 2. This section is a part of each Division 26.
- C. Refer to General Conditions Document for this project for additional information.

1.3 SUBMITTALS

- A. Additional copies may be required by individual sections of these Specifications.

#### 1.4 COORDINATION DRAWINGS

A. Prepare coordination drawings to a scale of 1/4"=1'-0" or larger; detailing major elements, components, and systems of electrical equipment and materials in relationship with other systems, installations, and building components in spaces such as electric switchgear room, emergency generator room, and electric closets. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the Work, including (but not necessarily limited to) the following:

1. Indicate the proposed locations of major raceway systems, equipment, and materials. Include the following:
  - a. Clearances for servicing equipment, including space for equipment disassembly required for periodic maintenance.
  - b. Exterior wall and foundation penetrations.
  - c. Fire-rated wall and floor penetrations.
  - d. Equipment connections and support details.
  - e. Sizes and location of required concrete pads and bases.
2. Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.
3. Prepare floor plans, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.

#### B. Project Coordination Drawings

1. This Trade shall add to Coordination Drawings prepared by the HVAC Contractor showing all of the electrical work (equipment, conduit, etc.) to be installed as part of the work of this section of the specifications.
2. Requirements for vibration isolation and seismic restraints shall be shown on the coordination drawings by each trade.
3. This Trade after showing all of the electrical work shall forward the completed reproducible Coordination Drawings to the General Contractor/Commissioner.
4. The Electrical Contractor shall attend a series of meetings arranged by the General Contractor/Commissioner to resolve any real or apparent interferences or conflicts with the work of the other Contractors.
5. The Electrical Contractor shall then make adjustments to his work on the Coordination Drawings to resolve any real or apparent interferences or conflicts.
6. After any real or apparent interferences and conflicts have been incorporated into the Coordination Drawings, the Electrical Contractor shall "sign-off" the final Coordination Drawings.

7. The Electrical Contractor shall not install any of this work prior to "sign-off" of final Coordination Drawings. If the electrical work proceeds prior to sign-off of Coordination Drawings, any change to the electrical work to correct the interferences and conflicts which result will be made by the Electrical Contractor at no additional cost to the project.

#### 1.5 RECORD DOCUMENTS

- A. Prepare record documents in accordance with the requirements in General Conditions. In addition to the requirements specified in General Conditions, comply with the following:
  1. A complete set of "as-built" or record electric drawings shall be made up and delivered to the Commissioner.
  2. The drawings shall show:-
    - a. All electric work installed exactly in accordance with the original design.
    - b. All electric work installed as a modification or addition to the original design.
    - c. The dimensional information necessary to delineate the exact location of all circuitry and wiring runs (other than lighting and appliance branch circuitry and small control, signal and communications runs) which are so buried or concealed as to be untraceable by inspection through the regular means of access established for inspection and maintenance.
    - d. The numbering information necessary to correlate all electrical energy consuming items (or outlets for same) to the panel or switchboard circuits from which they are supplied.
  3. The drawings shall be produced using AutoCAD software. The design drawing files will be made available should it be determined that such files would serve as suitable backgrounds for the "as-built" drawings.
  4. "As-built" information shall be submitted as follows:
    - a. CADD drawing files on CD-R in AutoCAD format.
    - b. One (1) set of reproducible drawings.
    - c. Two (2) sets of blueprints.
  6. The quantity of design drawings which are made available shall in no way be interpreted as setting a limit to the number of drawings necessary to show the required "as-built" information.
  7. Progress prints of record drawings shall be submitted monthly during the construction period for Commissioner's approval.

## 1.7 MAINTENANCE MANUALS

- A. Prepare maintenance manuals in accordance with General Conditions. In addition to the requirements specified in General Conditions, include the following information for major equipment items such as automatic transfer switches, lighting fixtures, and other items as specified elsewhere.
  - 1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
  - 2. Manufacturer's printed operating procedures include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions.
  - 3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
  - 4. Servicing instructions.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

## 1.9 CODES, PERMITS AND INSPECTIONS

- A. All work shall meet or exceed the latest requirements of all national, state, county, municipal, and other authorities exercising jurisdiction over electrical construction work and the project.
- B. All required permits and inspection certificates shall be obtained, paid for, and made available at the completion of the work.
- C. Any portion of the work which is not subject to the requirements of an electric code published by a specific authority having jurisdiction shall be governed by the National Electrical Code and other applicable sections of the National Fire Code, as published by the National Fire Protection Association.



- D. Equipment, material, layout and installation provided as part of the electrical work shall conform to the requirements of the Advisory Board of the Bureau of Electrical Control (Department of Buildings), the Mechanical Equipment Acceptance Division of the Building Department (MEA), the Board of Standards and Appeals (BSA), and other agencies having jurisdiction. Include as part of the electrical work all required filings and submissions for approval. Equipment furnished separate from - but installed as part of - the electrical work, which does not have all necessary approvals, shall not be installed until approvals are obtained by the parties furnishing the equipment. The controlled inspection performed by City of New York for certain portions of the work as called for in the New York City Building Code, Section C27-132 and Section C27-136 and the filing of all necessary reports for approval, Form TR-1, with the Building Department shall be included as part of the electric work. The name of the Licensed Professional Engineer approved by City of New York who will be responsible for making the inspections on Form TR-1 shall be submitted for approval as soon as possible or within 90 days of the award of the contract.
- E. Installation procedures, methods and conditions shall comply with the latest requirements of the Federal Occupational Safety and Health Administration (OSHA).
- F. All equipment furnished as part of the electrical work shall comply with the latest editions of all applicable state and municipal "energy codes." Provide certification from the equipment suppliers for all energy-consuming equipment that the equipment fully complies with these codes. Equipment submissions will not be accepted for review unless accompanied by such certification in writing.

#### 1.10 GUARANTEES AND CERTIFICATIONS

- A. All work shall be guaranteed to be free from defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from same shall be replaced or repaired as directed for the duration of stipulated guaranteed periods.
- B. The duration of guarantee periods following the date of beneficial use of the system shall be one year. Beneficial use is defined as operation of the system to obtain its intended use.
- C. The date of acceptance shall be the date of the final payment for the work or the date of a formal notice of acceptance, whichever is earlier.
- D. Non-durable items such as electric lamps, shall be replaced up to the date of acceptance, such that they shall have had no more than 100 hours use prior to this date.
- E. Certification shall be submitted attesting to the fact that specified performance criteria are met by all items of electrical equipment for which such certifications is required.

#### 1.11 DEFINITIONS AND INTERPRETATIONS

- A. As used in the drawings and specifications for electrical work, certain non-technical words shall be understood to have specific meanings as follows regardless of indications to the contrary in the General Conditions or other documents governing the electric work.

"Furnish" -- Purchase and deliver to the project site complete with every necessary appurtenance and support, all as part of the electrical work. Purchasing shall include payment of all sales taxes and other surcharges as may be required to assure that purchased items are free of all liens, claims or encumbrances. Payment of sales taxes is, however, specifically excluded.

"Install" -- Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project, all as part of the electrical work.

"Provide" -- "Furnish" and "install."

"New" -- Manufactured within the past two years and never before used.

Regardless of their usage in codes or other industry standards, certain words as used in the drawings or specifications for the electrical work, shall be understood to have the specific meanings ascribed to them in the following list:-

"Circuitry" -- Any electric work (not limited to light and power distribution) which consists of wires, cables, raceways, and/or specialty wiring method assemblies taken all together complete with associated junction boxes, pull boxes, outlet boxes, joints, couplings, splices and connections except where limited to a lesser meaning by specific description.

"Wiring" -- Same as Circuitry.

"Circuit" -- Any specific run of circuitry.

"Branch Circuit" -- Any light and power distribution system circuit which, at its load end, is directly connected to one or more electrical energy consuming items with no overcurrent protection devices interposed, other than (where required) those protecting the energy consuming items from overloading or overheating.

"Appliance Panel" -- Any panel, used in a light and power distribution system, containing single pole and/or multipole branches rated in various sizes.

"Lighting Panel" -- Any panel used in a light and power distribution system, having all (or the majority) of its branches single pole and rated the same.

"Feeder" -- Any item of light and power circuitry used in a distribution system which is not lighting and appliance branch circuitry.

"Main Feeder" -- Any feeder which, at its supply end, is connected through its own overcurrent protection (and switching) device, and none other, directly to a main service or a main service overcurrent protection (and switching) device.

"Branch Feeder" -- A feeder, other than a main feeder, which complies with the definition of a branch circuit.

"Submain Feeder" -- Any feeder which is neither a main feeder nor a branch feeder.

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"Distribution Panel" -- Any panel, used in a light and power distribution system, containing only multi-pole branches and with all (or the majority) of its branches used for feeders supplying other panels.

"Power Panel" -- Same as distribution panel, except with all (or the majority) of its branches used for feeders which do not supply other panels.

"Motor Power Circuit" -- Any circuit which operates nominally at 100 volts or more, and which carries electrical input energy to a motor.

"Motor Control Circuit" (used in conjunction with a motor for which a magnetic starter is supplied) -- Any circuit (other than a motor power circuit), which operates nominally at 100 volts or more, and which carries current intended for directing or indicating the performance of a motor starter.

"Motor Control Circuit" (used in conjunction with a motor for which a manual starter is supplied) -- Any circuit containing an extension of power circuit wires, other than those constituting the direct connection between source of supply, starter and motor.

"Motor Control Actuating Device" -- Any device which performs a switching function in a motor control circuit (pushbuttons, automatic contacting devices, etc.).

"Motor Control Actuated Device" -- Any device which functions in response to voltage received from a motor control circuit (pilot lights, solenoids, etc.)

"Package Unit" -- An item of equipment having one or more motors or other electric energy consuming elements integrally factory mounted on a single base, complete with all associated control devices and interconnecting wiring.

"Low Voltage" -- Below 50 volts.

"Process Control System" -- An overall control and/or logging system of a low voltage, electronic or pneumatic type available as a fully installed "package" from specialty manufacturers (commonly referred to as a "Temperature Control System" or an "Automatic Control System" or a "Building Management System" where used in conjunction with air conditioning).

"Grade Slab" -- A building floor slab which is in contact with or directly over grade (earth).

"Building Confines" -- The extent of a building, as defined by the outside surfaces of its peripheral walls, the top surface of its roof, and the underside surface of its grade slab.

"Distribution Switch" -- Any switch used in a light and power system other than a tumbler, toggle or specialty switch in the "wiring device" category.

"Normal Electric Work Conditions" -- Locations within building confines which are neither damp, wet nor hazardous and which are not used for air handling.

"Underground" -- Subsurface and exterior to building foundations.

"At Underside of Grade Slab" -- Under a grade slab and integrated into it.

"Below Grade Slab" -- Under a grade slab but not integrated into it.

"Standard" (as applied to wiring devices) -- Not of a separately designated individual type.

"Raceway" -- Any pipe, duct, extended enclosure, or conduit (as specified for a particular system) which is used to contain wires, and which is of such nature as to require that the wires be installed by a "pulling in" procedure.

"Concealed" (as applied to circuitry) -- Covered completely by building materials, except for penetrations (by boxes and fittings) to a level flush with the surface as necessitated by functional or specified accessibility requirements.

"Exposed" (as applied to circuitry) -- Not covered in any way by building materials.

"Subject to Mechanical Damage" -- Exposed within seven feet of the floor in mechanical rooms, or other spaces where heavy items (over 100 pounds) are moved around or rigged as a common practice or as required for replacement purposes.

"Secondary" (as applied to light and power distribution) -- Under 600 volts.

"Assembly" -- A defined set of elements of electric work.

- B. The following shall be treated as damp or wet locations within building confines, regardless of whether or not a high ambient moisture level is found to exist:-
1. Spaces where any designations indicating weatherproof (WP) or vapor-proof (VP) appear on the drawings.
  2. Cooling tower areas.
  3. Below waterproofing in slabs applied directly on grade.
  4. Kitchens up to a height of 18" above finished floor.
  5. Outside of waterproofing in foundation walls in contact with grade.
  6. Above waterproofing in slabs having no building above.
  7. Above waterproofing in fill on slabs having no building above.
- C. Electric work in slabs, walls or suspended ceilings which bound on a space defined as a damp or wet location shall meet the damp or wet location requirements if it enters into, or opens into the damp or wet location in any way.
- D. Where the word "conduit" is used without specific reference to type, it shall be understood to mean "raceway".

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- E. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any electrical item in the drawings and specifications for electrical work carries with it the instruction to furnish, install and connect the item as part of the electrical work regardless of whether or not this instruction is explicitly stated.
- F. It shall be understood that the specifications and drawings are complementary and are to be taken together for a complete interpretation of the work. Where there are conflicts between the drawings and specifications or within the specifications or drawings themselves, the items of higher standard shall govern.
- G. To the extent that they govern the basic work, the specifications also govern change order work if any.
- H. No exclusion from or limitation in, the symbolism used on the drawings for electrical work or the language used in the specifications for electrical work shall be interpreted as a reason for omitting the appurtenances or accessories necessary to complete any required system or item of equipment.
- I. The drawings for electrical work utilize symbols and schematic diagrams which have no dimensional significance. The work shall, therefore, be installed to fulfill the diagrammatic intent expressed on the electrical drawings, but in conformity with the dimensions indicated on the final working drawings, field layouts and shop drawings of all trades. In particular, information as to the exact size, location and electrical connection points for mechanical equipment shall be derived by reference to HVAC and Plumbing documents.
- J. Certain details appear on the drawings for electrical work which are specific with regard to the dimensioning and positioning of the work. These are intended only for general information purposes. They do not obviate field coordination for individual items of the indicated work.
- K. Information as to general construction and architectural general construction and architectural features and finishes shall be derived from structural and architectural drawings and specifications only.
- L. The use of words in the singular shall not be considered as limiting where other indications denote that more than one item is referred to.
- M. Ratings of devices, materials and equipment specified without reference to specific performance criteria shall be understood to be nominal or nameplate ratings established by means of industry standard procedures.
- N. The restriction of conductors in wires to copper, as specified elsewhere, shall be understood to also apply to all conductors (wire, cable or bus as applicable), including those provided as part of factory assembled components such as panelboards, panelettes, overcurrent protection and switching devices. This restriction shall apply equally to all such equipment regardless of indications (or lack thereof) elsewhere to the contrary. Aluminum will not be acceptable.

**PART 2 - PRODUCTS**

**2.1 TOUCH UP PAINT**

- A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.
- B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

**2.2 ACCESS DOORS IN FINISHED CONSTRUCTION**

- A. Furnish access doors as required for operation and maintenance of concealed equipment, valves, controls, etc., and coordinate their delivery with the installing Trade.
  - 1. Coordinate and prepare a location, size, and function schedule of access required and deliver to a representative of the installing Trade.
  - 2. Doors shall be minimum size 16 inches x 16 inches (40 cm. x 40 cm.) as manufactured by Karp Associates, Inland Steel Products "Milcor", "MIFAB" or other approved in accordance with the following schedule:

Location	Type	Catalog Number
Plaster Ceiling	Recessed Door Panel	Karp DSC-210-PL Milcor Style AP MIFAB-CAD-PL
Acoustic Tile Ceiling	Recessed Door Panel for Tile	Karp DSC-210 Milcor Style AT MIFAB-CAD
Plaster Wall	Flush Door Panel	Karp DSC-214-PL Milcor Style K MIFAB-CAD-PL-PL
Drywall	Flush Door Panel	Karp DSC-214-M Milcor Style DW MIFAB-MDW
Drywall	Recessed Door Panel	Karp-RDW-210 MIFAB-CAD-FL
Ceramic Tile Walls	Flush Door Panel	Karp DSC-214-M Milcor Style M MIFAB-UA
Masonry Wall	Flush Door Panel	Karp DSC-214-M Milcor Style M MIFAB-UA
3-Hour Rated Masonry Shaft	Flush Door Panel	Karp DSC-211-FRT MIFAB-MPFR-SD

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Location	Type	Catalog Number
1-1/2 Hour Rated Shaft	Flush Door Panel	Karp KRP-150-FR Milcor Fire Door Rated Access Door Panel MIFAB-MPFR

3. Doors and frames shall be given a factory prime coat of corrosion resistant paint.
4. Type shall be as approved by Commissioner.
5. Frames shall be welded minimum 14 gauge steel, mitered corners ground smooth with anchors.
6. Finish shall be as selected and approved by Commissioner.
7. Doors shall be minimum 14 gauge steel, heavy hinges flush with frame, invisible when closed.

### PART 3 - EXECUTION

#### 3.1 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment specifications in Divisions 02 through 26 for rough-in requirements.

#### 3.2 ELECTRICAL INSTALLATIONS

- A. General: Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment. Comply with the following requirements:
  1. Coordinate electrical systems, equipment, and materials installation with other building components.
  2. Verify all dimensions by field measurements.
  3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.
  4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
  5. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.

6. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
7. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Commissioner.
8. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
9. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
10. Coordinate location of access panels or doors where outlet boxes, junction boxes, or equipment are concealed behind finished surfaces.
11. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

B. Locations of all devices, fixtures, and other visible components shall be as indicated on the architectural drawings. Mounting heights shall be as specified in Division 26 Section "Raceways and Boxes".

C. Each piece of mechanical equipment located outside the building or on the roof shall be within 25 feet (7 m) of a duplex outlet. Where necessary to meet this criteria, provide duplex outlets in addition to those devices shown on the drawings. Each shall be complete with waterproof cover and integral GFI protection, and 20 ampere circuitry to the nearest 120 volt panel

### 3.3 FIRESTOPPING

A. Apply firestopping to cable and raceway penetrations of fire-rated floor and wall assemblies to achieve fire-resistance rating of the assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Firestopping."

### 3.4 FOUNDATIONS

A. General

1. All equipment, including but not limited to Automatic transfer switches, shall be provided with foundations.



2. Furnish shop drawings showing adequate concrete reinforcing steel details and templates for all concrete foundations and supports, and all required anchor bolts and other appurtenances necessary for the proper installation of this equipment. All concrete work shall be shown in detail on the shop drawings, prepared by this trade.
3. Each piece of equipment shall be set on a concrete base minimum 4 inches (10 cm.) high and extending 3 inches (8 cm.) beyond the equipment in all directions. Bases shall be integrally keyed to structural slab.

B. In seismic zones, provide lateral support for earthquake forces.

### 3.5 CUTTING AND PATCHING

A. General: Perform cutting and patching, the following requirements apply:

1. Perform cutting, fitting, and patching of electrical equipment and materials required to:
  - a. Uncover Work to provide for installation of ill-timed Work.
  - b. Remove and replace defective Work.
  - c. Remove and replace Work not conforming to requirements of the Contract Documents.
  - d. Install equipment and materials in existing structures.
  - e. Upon written instructions from the Commissioner, uncover and restore Work to provide for Commissioner observation of concealed Work.
2. Cut, remove, and legally dispose of selected electrical equipment, components, and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new Work.
3. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
4. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
5. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.
6. Patch existing finished surfaces and building components using new materials matching existing materials and experienced installers.
7. Patch finished surfaces and building components using new materials specified for the original installation and experienced installers.

### 3.6 ELECTRICAL DEMOLITION

- A. The project contains existing electrical installations. Integrate the existing installations into the overall project as described below.

- B. Except where it is integrated into a new installation, maintain all existing electrical work operating and intact by including all procedures and materials necessary to:
1. Maintain the accessibility and functionality of all outlets, manholes, handholes, junction boxes, pull boxes, wiring devices, panels, switchgear, fixtures and the like, that may be covered over or interfered with by new construction work of all trades.
  2. Maintain continuity in the existing light and power circuitry, communications and signal circuitry or other electric runs which must be disrupted to allow the new work of all trades to proceed.
  3. Cut back and terminate at accessible points, in a safe manner, all live wiring made unnecessary or obsolete by the new construction work of all trades.
- C. No portion of existing electrical installations shall be used to make up any of the required electrical work except as follows:
1. Equipment and devices, as specifically indicated.
  2. Raceways with associated junction boxes and pull boxes) only for feeders as specifically indicated.
  3. Raceways (with associated junction boxes and pull boxes) and cables for feeders as specifically indicated.
  4. Concealed raceways (with associated outlet boxes) only for lighting and appliance branch circuitry to the maximum extent possible.
- D. Where it is required that items be made up with components which are both new and existing.
1. It shall be interpreted that the specifications govern only as they are applicable to new components.
  2. Outages of existing electrical systems necessitated by the new construction work of all trades shall be in accordance with a schedule issued in the field by the Commissioner include all electric work, overtime labor and supervision necessary to adhere to this schedule.
  3. Any existing electrical work which is pulled out or cut away in compliance with the above requirements shall be removed from the site as if it were rubbish. proper credit shall be given for all salvageable items.
  4. During demolition procedures, provide all necessary protection for existing electric work required for reuse. abandoned low voltage cables to be removed where indicating and if not tagged for future use. cables should be removed unless otherwise directed by City of New York.

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5. Identify for future use with a tag at each unterminated end all low voltage (audio, data, class 2, class 3, pltc, fire alarm, optical fiber, communications, coaxial, and network) cables which are abandoned.

**3.7 REFINISHING AND TOUCH UP PAINTING**

- A. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
- B. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.
- C. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
- D. Repair damage to PVC or paint finishes with matching touch up coating recommended by manufacturer.

**3.8 FIELD QUALITY CONTROL**

- A. Inspect installed components for damage and faulty work, including the following:
  1. Cutting and patching for electrical construction.
  2. Touch up painting.

**3.9 CLEANING AND PROTECTION**

- A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.
- B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION 26 05 00

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SECTION 26 05 19 - CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes building wires and cables and associated splices, connectors, and terminations for wiring systems rated 600 volts and less.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 2. Section 26 05 00 "Common Work Results for Electrical Work".
  - 3. This section is a part of each Division 26 section.

1.3 SUBMITTALS

- A. Product Data: for each type of product indicated.
- B. Field Quality Control Test Reports.

1.4 QUALITY ASSURANCE

- A. Listing and Labeling: Provide products specified in this Section that are Underwriters Laboratories listed and labeled.
  - 1. The Terms "Listed and Labeled": As defined in the "National Electrical Code," Article 100.
- B. Comply with NFPA 70, as amended by state and local codes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

## 2.2 CONDUCTORS AND CABLES

### A. Available Manufacturers:

1. American Insulated Wire Corp.; a Leviton Company.
2. General Cable Corporation.
3. Southwire Company, Inc.
4. Belden, Inc.

### B. Refer to Part 3 "Conductor and Insulation Applications" Article for insulation type, cable construction, and ratings.

1. Conductor Insulation Types: Type THHN, THWN, XHHW complying with NEMA WC 5 or 7.

## 2.3 CONNECTORS AND SPLICES

### A. Available Manufacturers:

1. AFC Cable Systems, Inc.
2. AMP Incorporated/Tyco International.
3. Hubbell/Anderson.
4. O-Z/Gedney; EGS Electrical Group LLC.
5. Thomas & Betts.
6. 3M Company; Electrical Products Division.

### B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

## PART 3 - EXECUTION

### 3.1 WIRE AND INSULATION APPLICATIONS

- A. Utilize copper conductors with THWN, THHN or XHHW insulation, except provide THHW-2, THWN-2 or XHHW-2 insulation for conductors 1/0 and larger in "wet" locations. Conductors utilized in underground installations shall be UL Listed for use in wet locations. Conductors shall be run in raceways as described in Section 26 "Raceways and Boxes". Type THHW and THHW-2 shall not be utilized where excluded by conduit sizing. Type THWN shall not be utilized for connection to 100 percent rated overcurrent devices.

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- B. In general, cable ampacities are based on a 60 degree C rating for cables #1 AWG and smaller and on a 75 degree C rating for larger cables. In conjunction with this, note the following:
1. 75 degree C ratings may be utilized for cables #1 AWG and smaller where overcurrent protection and switching devices (OCD's), wiring devices and solidly connected equipment connected to such cables are listed and identified for use with 75 degree C rated conductors. (Note that these specifications require all OCD's - regardless of ampere rating to be suitable for use with 75 degree C rated conductors).
  2. Increase indicated cable (and raceway) sizing as required for circuitry where conductors #1 AWG and smaller will connect directly to solidly connected utilization equipment whose load current will exceed the 60 degree C rating of the cable, and for which manufacturer's approval for cable terminations is less than 75 degrees C, or to receptacles whose ampere rating exceeds the 60 degree C rating of the connected cables unless such receptacles are listed for use with 75 degree C rated conductors. Note that accessible intermediate tap boxes may be utilized adjacent to 60 degree C rated terminations to allow conductor "upsizing" locally so as to comply with such termination requirements.
  3. Increase indicated cable (and raceway) sizing as required for circuitry where conductors are run in conduits exposed to direct sunlight on or above rooftops in accordance with the temperature adjustment factors described in the electrical code.
- C. For low voltage systems where circuits are power limited in accordance with Class 2 or Class 3 requirements (as defined in Article 725 of the National Electrical Code) utilize cables having characteristics as follows:
1. Cable shall be U.L. listed type CL3 except that where run in hung ceilings used as air handling spaces or where run from floor to floor, they shall be of a fluoropolymer installed type U.L. listed as type CL3P or CMP. Where run in cable trays they shall be U.L. listed type PLTC, except type CMP where trays are run in plenums.
- D. For low voltage systems whose circuits are not power limited Class 2 or Class 3 (in accordance with the requirements of Article 725 of the National Electrical Code), and which are not telecommunications circuitry (in accordance with Article 800 thereof), utilize copper conductors having TFN insulation for sizes #16 AWG and smaller, and type THHN or THWN for sizes #14 AWG and larger. Wires shall be run in electric metallic tubing.
- E. For low voltage circuits intended for the distribution of voice or data utilize communications cables (complying with requirements of Article 800 of the National Electrical Code) having characteristics as follows:

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1. Cables shall be U.L. listed type CM except that where run in hung ceilings used as air handling spaces or where run from floor to floor, they shall be U.L. listed as type CL3P or CMP or CMR respectively. Where run in cable trays, they shall be U.L. listed type PLTC, except they shall be type CMP where trays are run in plenums.
2. Refer to Division 26, Section "Fire Protective Alarm System" for fire alarm system wiring.

### 3.2 INSTALLATION

- A. Conceal cables in finished walls, ceilings and floors unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.
- E. Support cables according to Division 26 Section "Supporting Devices".
- F. Seal around cables penetrating fire-rated elements according to Division 7 Section "Through-Penetration Firestop Systems."
- G. Identify wires and cables according to Division 26 Section "Electrical Identification".

### 3.3 CONNECTIONS:

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Maintain all splices and joints in removable cover boxes or cabinets where they may be easily inspected.
- D. Locate each completed conductor splice or joint in the outlet box, junction box, or pull box containing it, so that it is accessible from the removable cover side of the box.



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- E. Join solid conductors #8 AWG and smaller by securely twisting them together and soldering, or by using insulated coiled steel spring "wire nut" type connectors. Exclude "wire nuts" employing non-expandable springs. Exclude push-on type connectors. Terminate conductors #8 AWG and smaller by means of a neat and fast holding application of the conductors directly to the binding screws or terminals of the equipment or devices to be connected. Terminals and connectors shall be U.L. approved specifically for the application.
  - F. Join, tap and terminate stranded conductors #6 AWG and larger by means of solder sleeves, taps and lugs with applied solder or by means of pressure indent type connectors, or mechanical connectors utilizing ball tipped set screws. Apply pressure indent type connectors, utilizing tools manufactured specifically for the purpose and having features preventing their release until the full pressure has been exerted on the lug or connector. Factory installed equipment or device terminals shall be of types UL approved specifically for the application.
  - G. Except where wire nuts are used, build up insulation over conductor joints to a value equal both in thickness and dielectric strength to that of the factory applied conductor insulation. Insulation of conductor taps and joints shall be by means of half-lapped layers of rubber tape, with an outer layer of friction tape; by means of half-lapped layers of approved plastic electric insulating tape; or by means of split insulating casings manufactured specifically to insulate the particular connector and conductor, and fastened with stainless steel or non-metallic snaps or clips.
  - H. Exclude splicing procedures for neutral conductors in lighting and appliance branch circuitry which utilize device terminals as the splicing points.
  - I. Exclude joints or terminations utilizing solder in any conductors used for grounding or bonding purposes.
  - J. Exclude all but solder or pressure indent type joints in conductors used for signaling or communications purposes.
- 3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS
- A. Coordinate sleeve selection and application.
  - B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
  - C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
  - D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
  - E. Cut sleeves to length for mounting flush with both wall surfaces.
  - F. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.

- G. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 7 Section "Joint Sealants."
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials.
- K. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between cable and sleeve for installing mechanical sleeve seals.

### 3.5 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground exterior-wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

### 3.6 FIREPROOFING WIRES AND CABLES:

- A. Beyond the termination of raceways, apply fireproofing over the unprotected insulation and/or splices of the following:-
  - 1. All service feeder cables ahead of main service overcurrent protection devices within all the pull boxes they pass through and elsewhere where they are not enclosed in raceways.
- B. Fireproofing of wires and cables shall be by means of a half-lapped layer of Scotch 77 fire and arc-proofing tape. The wrapped tape shall be secured by a band consisting of two layers of glass cloth electrical tape. Fireproofing shall be extended up into raceways. Fireproofing shall be applied in an overall manner to raceway groupings of conductors.

3.7 INSTALLATION OF CIRCUITRY FOR MISCELLANEOUS LOW VOLTAGE SYSTEMS:

- A. Comply with requirements described in applicable subsections of this Section. In particular, note the following circuitry requirements for low voltage systems:
1. Wiring for miscellaneous low voltage systems may be run without conduit - subject to the approval of the local authorities - except where prohibited by other sections of these specifications or by indications on the drawings.
  2. Where conduit is required, it shall be steel electric metallic tubing (EMT), except that it shall be galvanized intermediate steel conduit where located within 8 feet (2.4 m) of the floor in mechanical spaces (or is otherwise exposed to mechanical damage), or is intended for embedment in concrete.
  3. Wires and cables shall have characteristics in compliance with Articles 725 and/or 800 (as applicable) of the National Electrical Code as described elsewhere in the specifications or drawings for this project, and shall be U.L. listed in accordance therewith.
  4. Where wires and cables are permitted to be run without conduit, they shall be independently supported from the building structure or ceiling suspension systems at intervals not exceeding four feet on center, utilizing cable supports specifically approved for the purpose. Wires and cables shall not rest on or depend on support from suspended ceiling media (tiles, lath, plaster, as well as splines, runners or bars in the plane of the ceiling), nor shall they be supported from pipes, ducts or conduits. Where cables are bundled together, separate bundles shall be provided separately for each type of cabling and separately for each independent system. Bundling and/or supporting ties shall be of a type suitable for use in a ceiling air handling plenum regardless of whether or not installed in a plenum.
  5. Cables shall be tagged or labeled at each termination point and in each intermediate junction box, pull box or cabinet through which they pass.
  6. Comply with applicable requirements for locating and routing circuitry, for installing circuitry, and for fire-stopping as described in other sub-section of this Section.

3.8 FIELD QUALITY CONTROL

- A. Testing: Perform the following field quality-control testing:
1. After installing conductors and cables and before electrical circuitry has been energized, test for compliance with requirements.
  2. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.3.2. Certify compliance with test parameters.

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- B. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 2 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.
1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
  2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
  3. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- C. Test Reports: Prepare a written report to record the following:
1. Test procedures used.
  2. Test results that comply with requirements.
  3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION 26 05 19

## SECTION 26 05 26 - GROUNDING AND BONDING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented in other sections of these Specifications.
- B. Related sections include the following:
  - 1. Division 26 Section "Conductors and Cables."
  - 2. Division 26 Section "Raceways and Boxes."
  - 3. Division 26, Section "Underground Ducts and Utility Structures."

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
  - 1. Ground rods.
  - 2. Ground plates.
- B. Field Test Reports: Written reports specified in Part 3.

#### 1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by Underwriters Laboratories, Inc.
- B. Comply with UL 467.
- C. Comply with NFPA 70, as amended by state and local codes.
- D. Comply with applicable BICSI standards.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Erico Products, Inc.
2. Ideal Industries, Inc.
3. Kearney.
4. O-Z/Gedney Co.
5. Raco, Inc.
6. Thomas & Betts, Electrical

## 2.2 GROUNDING CONDUCTORS

- A. For insulated conductors, comply with Division 26 Section "Conductors and Cables."
- B. Material: Copper
- C. Equipment Grounding Conductors: Insulated with green-colored insulation.
- D. Grounding Electrode Conductors: Stranded cable.
- E. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.
- F. Bare Copper Conductors: Comply with the following:
  1. Solid Conductors: ASTM B 3.
  2. Assembly of Stranded Conductors: ASTM B 8.
  3. Tinned Conductors: ASTM B 33.
- G. Copper Bonding Conductors: As follows (except where otherwise indicated):
  1. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG copper conductor, 0.25-inch (6.4 mm) in diameter.
  2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
  3. Bonding Jumper: Bare copper tape, braided bare copper No. 30 AWG conductors, terminated with copper ferrules; 1.625 inch (42 mm) wide and 1/16 inch (1.5 mm) thick.
  4. Tinned Bonding Jumper: Tinned-copper tape, braided copper No. 30 AWG conductors, terminated with copper ferrules; 1-5/8 inches (42 mm) wide and 1/16 inch (1.5 mm) thick.
- H. Grounding Bus: Bare, annealed copper bars of rectangular cross section, 1/4 by 2 inches (6 by 50 mm) in cross section, unless otherwise indicated; with mounting insulators.

## 2.3 CONNECTOR PRODUCTS

- A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.
- B. Connectors: Bolted-pressure-type connectors, or compression type.
- C. Bolted Clamps: Heavy-duty type.
- D. Pressure Connectors: High-conductivity-plated units.
- E. Welded Connections: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions for the specific types, sizes, and combinations of conductors and other items to be connected.

## 2.4 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel with high-strength steel core and electrolytic-grade copper outer sheath, molten welded to core.
  - 1. Size: 3/4 inch by 10 feet (19 by 3000 mm ).

## PART 3 - EXECUTION

### 3.1 APPLICATION

- A. Equipment Grounding Conductor Application: Comply with NFPA 70, as amended by state and local codes, for sizes and quantities of equipment grounding conductors
  - 1. Provide equipment grounding conductors with circuit conductors for all feeders and branch circuits.
- B. The ground bus of switchboards shall be connected to the main grounding electrode by means of insulated grounding electrode conductors run in intermediate metallic conduit and sized as per Code.
- C. The main grounding electrode shall be an accessible point on the nearest metallic main water service pipe. Connection shall be made on the street side of the main valve utilizing a ground clamp of a type specifically manufactured for the purpose. Bonding jumpers shall be provided around the water meters (if provided) and around insulating joints and/or sections, utilizing conductors sized as per Code and run in IMC. Bond the structural steel to the grounding electrode system.
- D. The water pipe ground shall be supplemented by an additional "made" electrode consisting of buried ground rods or copper plates laid on 3 inch (75 mm) charcoal bed, and provided in sufficient quantity so as to have a measured resistance to ground of not more than 25 ohms. Establish a bonding connection from the "made" electrode consisting of green insulated conductors run in IMC and sized as per Code.

- E. The neutral of secondary winding of each low voltage (i.e., less than 600 volts) transformer shall be grounded to the grounding electrode as specified hereinafter by means of an insulated grounding conductor sized as per Code and run in IMC. The neutral of each transformer shall be bonded to the transformer enclosure by means of an insulated conductor sized as per code. If not factory installed the jumper shall be field installed within the transformer enclosure.
- F. At each secondary voltage to secondary voltage transformer, bond the metallic water piping system to the transformer neutral at the nearest available location utilizing conductors sized equal to the grounding electrode conductor and run in conduit.
- G. The grounding electrode for each low voltage (both windings 600 volts or less) transformer shall consist of an exothermic welded connection to adjacent structural steel at a point where only fireproofing and not structural concrete is applied to it.
- H. The grounding electrode for each low voltage (both windings 600 volts or less) transformer shall be the main water service pipe entering the building taken at a point on the street side of its main valve. Utilize a common ground clamp on the main water pipe, with means for connecting the multiple separate grounding conductors from the various transformers. Ends of conduit at the break shall be equipped with bushings. The connection shall be made by means of an irreversible compression connector listed for the purpose or an exothermic weld.
- I. Bond metallic conduits containing grounding electrode conductors and main bonding conductors to the ground bus service enclosure and/or grounding electrode at both ends of each run utilizing grounding bushings and jumpers. Bonding jumpers shall be sized equal to the grounding electrode conductors.
- J. Provide grounding bonds for all metallic conduits of the light and power system which terminate at (or in pits below) distribution equipment for which a ground bus is specified. Accomplish this by equipping the conduits with bushings of the grounding type connected individually to the ground bus.
- K. Provide supplementary ground bonding to maintain continuity of the equipment and raceway grounding system as follows:
  - 1. Bonding jumpers shall be applied where wiring devices (receptacles and switches) are not equipped with approved self-grounding features. Include any necessary field modifications for termination of the bonding jumpers so as to insure grounding continuity.
  - 2. Bonding jumpers shall be applied to insure that grounding continuity does not depend solely on the supporting screws fastening metallic enclosures together.
  - 3. Include any necessary field modifications for termination of the bonding jumpers so as to insure grounding continuity.



- L. Where specifically noted on the drawings, or described hereinbefore in this Section, include insulated equipment and raceway grounding conductors run within the raceways. Where insulated equipment grounding conductors required for feeders have not been included in the quantities of conductors indicated on the drawings, incorporate such conductors in accordance with the electrical code. Adjust conduit sizing if required.
- M. Grounding Underground Distribution System Components complies with IEEE C2 grounding requirements and the following
  - 1. Grounding Manholes and Handholes: Install a driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inches (100 mm) will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, non-shrink grout.
  - 2. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields as recommended by manufacturer of splicing and termination kits.
  - 3. Pad-Mounted Transformers and Switches: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with pad mounted equipment by connecting them to underground cable and grounding electrodes. Install tinned-copper conductor not less than No. 2 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 6 inches (150 mm) from the foundation.

### 3.2 INSTALLATION

- A. General: Ground electrical systems and equipment according to NFPA 70, as amended by state and local codes, except where Drawings or Specifications exceed such requirements.
- B. Grounding Rods: Locate a minimum of 1-rod length from each other and at least the same distance from any other grounding electrode.
  - 1. Drive until tops are 2 inches (50 mm) below finished floor or final grade, except as otherwise indicated.
  - 2. Interconnect with grounding-electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make these connections without damaging copper coating or exposing steel.

- C. **Grounding Conductors:** Route along the shortest and straightest paths possible, except as otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- D. **Underground Grounding Conductors:** Use bare copper wire. Bury at least 24 inches (600 mm) below grade.
- E. **Metal Water Service Pipe:** Provide insulated copper grounding conductors, sized as indicated, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes by grounding-clamp connectors. Where a dielectric main water fitting is installed, connect grounding conductor to street side of fitting. Provide a grounding jumper with the same size conductor across dielectric fittings. Bond grounding-conductor conduit to conductor at each end.
- F. **Water Meter Piping:** Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding-clamp connectors.
- G. **Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fans, blowers, electric heaters, and air cleaners.** Use braided-type bonding straps.

### 3.3 CONNECTIONS

- A. **General:** Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
  - 1. Use electroplated or hot-tin-coated materials to assure high conductivity and to make contact points closer in order of galvanic series.
  - 2. Make connections with clean, bare metal at points of contact.
  - 3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- B. **Exothermic-Welded Connections:** Use for connections to structural steel and for underground connections, except those at test wells. Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. **Equipment Grounding-Wire Terminations:** For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

- D. **Noncontact Metal Raceway Terminations:** Where metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at both entrances and exits with grounding bushings and bare grounding conductors, except as otherwise indicated.
- E. **Tighten screws and bolts for grounding and bonding connectors and terminals** according to manufacturer's published torque-tightening values. Where these requirements are not available, use those specified in UL 486A and UL 486B.
- F. **Compression-Type Connections:** Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by manufacturer of connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
- G. **Moisture Protection:** Where insulated grounding conductors are connected to grounding rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

#### 3.4 FIELD QUALITY CONTROL

- A. **Testing Agency:** Engage an independent electrical testing organization to perform tests described below.
- B. **Tests:** Subject the completed grounding system to a megger test at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal. Measure ground resistance not less than 2 full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by the fall-of-potential method according to IEEE 81.
- C. **Maximum grounding resistance shall be 25 ohms.**
- D. **Excessive Ground Resistance:** Where resistance to ground exceeds specified values, provide additional grounding to achieve required results.
- E. **Report:** Prepare test reports, certified by the testing organization, of ground resistance at each test location. Include observations of weather and other phenomena that may affect test results.
- F. **Field Test Reports:** Submit written test reports to include the following:
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.

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3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

END OF SECTION 26 05 26

## SECTION 26 05 29 - SUPPORTING DEVICES

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes secure support from the building structure for electrical items by means of hangers, supports, anchors, sleeves, inserts, seals, and associated fastenings.
- C. Related sections include the following:
  - 1. Refer to other Division 26 sections for additional specific support requirements that may be applicable to specific items.
  - 2. Division 26, Section "Seismic Controls for Electrical Work."

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
- B. Product data for each type of product specified.

#### 1.4 QUALITY ASSURANCE

- A. Electrical Component Standard: Components and installation comply with NFPA 70, as amended by state and local codes.
- B. Electrical components are listed and labeled by UL, ETL, CSA, or other approved, nationally recognized testing and listing agency that provides third-party certification follow-up services.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. Slotted Metal Angle and U-Channel Systems:
    - a. B-Line Systems, Inc.
    - b. Haydon Corp.
    - c. Kin-Line, Inc.
    - d. Unistrut Diversified Products
  2. Conduit Sealing Bushings:
    - a. Cooper Industries, Inc.
    - b. L.E. Mason Co.
    - c. O-Z/Gedney
    - d. Raco, Inc.
    - e. Spring City Electrical Mfg. Co.
    - f. Thomas & Betts Corp.

### 2.2 COATINGS

- A. Coating: Supports, support hardware, and fasteners are protected with zinc coating or with treatment of equivalent corrosion resistance using approved alternative treatment, finish, or inherent material characteristic. Products for use outdoors are hot-dip galvanized.

### 2.3 MANUFACTURED SUPPORTING DEVICES

- A. Raceway Supports: Clevis hangers, riser clamps, conduit straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring steel clamps.
1. Fasteners: Types, materials, and construction features as follows:
  2. Expansion Anchors: Carbon steel wedge or sleeve type.
  3. Toggle Bolts: All steel springhead type.
- B. Powder-Driven Threaded Studs: Heat-treated steel, designed specifically for the intended service.
- C. Conduit Sealing Bushings: Factory-fabricated watertight conduit sealing bushing assemblies suitable for sealing around conduit, or tubing passing through concrete floors and walls. Construct seals with steel sleeve, malleable iron body, neoprene sealing grommets or rings, metal pressure rings, pressure clamps, and cap screws.

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- D. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for nonarmored electrical cables in riser conduits. Provide plugs with number and size of conductor gripping holes as required to suit individual risers. Construct body of malleable-iron casting with hot-dip galvanized finish.
- E. U-Channel Systems: 16-gauge steel channels, with 9/16-inch (14 mm) diameter holes, at a minimum of 8 inches (20 cm) on center, in top surface. Provide fittings and accessories that mate and match with U-channel and are of the same manufacture.

#### 2.4 FABRICATED SUPPORTING DEVICES

- A. General: Shop- or field-fabricated supports or manufactured supports assembled from U-channel components.
- B. Steel Brackets: Fabricated of angles, channels, and other standard structural shapes. Connect with welds and machine bolts to form rigid supports.
- C. Pipe Sleeves: Provide pipe sleeves of one of the following:
  - 1. Sheet Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate sleeves from the following gauge metal for sleeve diameter noted:
    - a. 3 inch (8 cm) and smaller: 20-gauge.
    - b. 4 inch (10 cm) to 6-inch (15 cm): 16-gauge.
    - c. over 6-inch (15 cm): 14-gauge.
  - 2. Steel Pipe: Fabricate from Schedule 40 galvanized steel pipe.
  - 3. Plastic Pipe: Fabricate from Schedule 80 PVC plastic pipe.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install supporting devices to fasten electrical components securely and permanently in accordance with Electrical Code requirements.
- B. Coordinate with the building structural system and with other electrical installation.
- C. Raceway Supports: Comply with NFPA 70, as amended by state and local codes, and the following requirements:
  - 1. Conform to manufacturer's recommendations for selection and installation of supports.
  - 2. Strength of each support is adequate to carry present and future load multiplied by a safety factor of at least four. Where this determination results in a safety allowance of less than 200 lbs (90 kg), provide additional strength until there is a minimum of 200 lbs (90 kg) safety allowance in the strength of each support.

3. Install individual and multiple (trapeze) raceway hangers and riser clamps as necessary to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assembly and for securing hanger rods and conduits.
  4. Support parallel runs of horizontal raceways together on trapeze-type hangers.
  5. Support individual horizontal raceways by separate pipe hangers. Spring steel fasteners may be used in lieu of hangers only for 1-1/2-inch (DN 41) and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings only. For hanger rods with spring steel fasteners, use 1/4 inch (6 mm) diameter or larger threaded steel. Use spring steel fasteners that are specifically designed for supporting single conduits or tubing.
  6. Support exposed and concealed raceway within 1 foot (30 cm) of an unsupported box and access fittings. In horizontal runs, support at the box and access fittings may be omitted where box or access fittings are independently supported and raceway terminals are not made with chase nipples or threadless box connectors.
  7. In vertical runs, arrange support so the load produced by the weight of the raceway and the enclosed conductors is carried entirely by the conduit supports with no weight load on conductor terminals.
- D. Vertical Conductor Supports: Install simultaneously with installation of conductors.
- E. Miscellaneous Supports: Support miscellaneous electrical components as required to produce the same structural safety factors as specified for raceway supports. Install metal channel racks for mounting cabinets, panelboards, disconnects, control enclosures, pull boxes, junction boxes, transformers, and other devices.
- F. In open overhead spaces, cast boxes threaded to raceways need not be supported separately except where used for fixture support; support sheet metal boxes directly from the building structure or by bar hangers. Where bar hangers are used, attach the bar to raceways on opposite sides of the box and support the raceway with an approved type of fastener not more than 24 inches (60 cm) from the box.
- G. Sleeves: Install in concrete slabs and walls and all other fire-rated floors and walls for raceways and cable installations. For sleeves through fire-rated-wall or floor construction, apply UL-listed firestopping sealant in gaps between sleeves and enclosed conduits and cables in accordance with "Firestopping" requirement of Division 26 Section "Common Work Results for Electrical."
- H. Conduit Seals: Install seals for conduit penetrations of slabs on grade and exterior walls below grade and where indicated. Tighten sleeve seal screws until sealing grommets have expanded to form watertight seal.
- I. Fastening: Unless otherwise indicated, fasten electrical items and their supporting hardware securely to the building structure, including but not limited to conduits, raceways, cables, cabinets, panelboards, transformers, boxes, disconnect switches, and control components in accordance with the following:



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1. Fasten by means of wood screws or screw-type nails on wood, toggle bolts on hollow masonry units, concrete inserts or expansion bolts on concrete or solid masonry, and machine screws, welded threaded studs, or spring-tension clamps on steel. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used instead of expansion bolts and machine or wood screws. Do not weld conduit, pipe straps, or items other than threaded studs to steel structures. In partitions of light steel construction, use sheet metal screws.
  2. Holes cut to depth of more than 1-1/2 inches (4 cm) in reinforced concrete beams or to depth of more than 3/4 inch (2 cm) in concrete do not cut the main reinforcing bars. Fill holes that are not used.
  3. Ensure that the load applied to any fastener does not exceed 25 percent of the proof test load. Use vibration- and shock- resistant fasteners for attachments to concrete slabs.
- J. In general, walls and partitions are not suitable for supporting the weight of panelboards and the like. Include supporting frames or racks extending from floor slab to ceiling slab for all such items unless specifically instructed otherwise by the Commissioner.
- K. Include supporting frames or racks for equipment, intended for vertical surface mounting, which is required in a free standing position.
- L. Supporting frames or racks are of standard angle, standard channel or specialty support system steel members. They are rigidly bolted or welded together and adequately braced to form a substantial structure. Racks are of ample size to assure a workmanlike arrangement of all equipment mounted on them.
- M. No work intended for exposed installation in damp locations is mounted directly on any building surface. In such locations, flat bar members or spacers are used to create a minimum of 1/4 inch (6 mm) air space between the building surfaces and the work.
- N. Nothing (including outlet, pull and junction boxes and fittings) depends on electric conduits, raceways or cables for support except that threaded hub type fittings having a gross volume not in excess of 100 cubic inches (1600 cc) may be supported from heavy wall conduit, where the conduit in turn is securely supported from the structure within 5 inches (12 cm) of the fitting on two opposite sides.
- O. Nothing rests on, or depends for support on, suspended ceiling media (tiles, lath, plaster, as well as splines, runners, bars and the like in the plane of the ceiling). Vertical members which suspend the ceiling (together with their horizontal bracing which occurs above the ceiling), however, may be used for support, subject to the following criteria:
1. Supporting procedures are in accordance with the ceiling system manufacturer's instructions.
  2. Supporting members for circuitry are rigid. Wires may not be used for such supports.
  3. The ceiling is not fire rated.

- P. In conjunction with lighting fixtures or other items weighing less than 40 pounds (18 kg), the above restriction against supporting from suspended ceiling splines, runners or bars in the plane of the ceiling may be waived for ceilings which have been specifically approved for the weight and arrangement of fixtures being applied. Any support members, mechanical fastening means (i.e., bolts, screws or rivets), or other appurtenances, however, required to tie in or adapt to the fixtures and their ceiling opening frames (if any) to the ceiling in the approved manner are included as part of the electric work.
- Q. As a minimum procedure, support surface or pendant mounted lighting fixture:-
1. From its outlet box by means of an interposed metal strap, where weight is less than 5 pounds (2 kg).
  2. From its outlet box by means of a hickey or other direct threaded connection, where weight is from 5 pounds (2 kg) to 50 pounds (20 kg).
  3. Directly from structural slab, deck or framing member, where weight exceeds 50 pounds (20 kg).
- R. As a minimum procedure, support recessed lighting fixtures as follows:
1. From ceiling suspension members, as described above, where weight is 80 pounds (35 kg) or less. Fluorescent fixtures are provided with clips to secure the fixtures to the ceiling members at two opposite ends of each fixture.
  2. Directly from structural slabs, decks or framing members where weight is more than 80 pounds (35 kg).
- S. Include in the electric work channel sills or skids for leveling and support of all floor mounted electrical equipment.
- T. Where permitted loading is exceeded by direct application of electrical equipment to a slab or deck, include in the electric work proper dunnage as required to distribute the weight in a safe manner.
- U. This project is required to comply with Seismic Requirements for the fastening and support of electrical work. The additional electric work requirements necessary for compliance are defined in Division 26 within the Section "Seismic Controls for Electrical Work." Such requirements are understood to be complementary to all specified work within this Section.

END OF SECTION 26 05 29

## SECTION 26 05 33 - RACEWAYS AND BOXES

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- C. Related sections include the following:
  - 1. Division 26 Section "Underground Ducts and Utility Structures" for exterior ductbanks, manholes, and underground utility construction.
  - 2. Division 26 Section "Common Work Results for Electrical" for firestopping.
  - 3. Division 26 Section "Seismic Controls for Electric Work" for seismic restraints and bracing of raceways, boxes, enclosures and cabinets.
  - 4. Division 26 Section "Supporting Devices" for raceway and box supports.
  - 5. Division 26 Section "Wiring Devices" for devices installed in boxes.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. ENT: Electrical non-metallic tubing.
- C. FMC: Flexible metal conduit.
- D. IMC: Intermediate metal conduit.
- E. LFMC: Liquidtight flexible metallic conduit.

- F. RNC: Rigid nonmetallic conduit.

#### 1.4 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, hinged-cover enclosures, and cabinets.

#### 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70, as amended by state and local codes.

#### 1.6 COORDINATION

- A. Coordinate layout and installation of raceways, boxes, enclosures, cabinets and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system and partition assemblies.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection.
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering Products that may be incorporated in the Work include, but are not limited to, the following:

#### 2.2 METAL CONDUIT AND TUBING:

- A. Available Manufacturers
  - 1. Alfex Corp
  - 2. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
  - 3. LTV Steel Tubular Products Company.
  - 4. Wheatland Tube Co.
  - 5. Triangle PWC, Inc.
- B. Rigid Steel Conduit: ANSI C80.1
- C. IMC: ANSI C80.6.

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D. EMT and Fittings: ANSI C80.3.

1. Fittings: Compression.

E. FMC: Zinc coated steel.

F. LFMC: Flexible steel conduit with PVC jacket.

G. Fittings: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Fittings for EMT: Die-cast compression type.

H. RNC: NEMA TC 2, Schedule 40 and Schedule 80 PVC.

### 2.3 METAL WIREWAYS

A. Available Manufacturers:

1. Hoffman.
2. Square D
3. The Wiremold Company

B. Material and Construction: Sheet metal sized and shaped as indicated.

1. Dry locations: NEMA 250, Type 1.
2. Damp or Wet locations: NEMA 250, Type 3R.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for a complete system.

D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

E. Wireway Covers: Screw-cover type.

F. Finish: Manufacturer's standard enamel finish.

### 2.4 SURFACE RACEWAYS

A. Surface Metal Raceway: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating and standard color paint finish.

1. Available Manufacturers:

- a. Thomas & Betts Corporation.
- b. Walker Systems, Inc; Wiremold Company (The)

c. The Wiremold Co., Electrical Sales Division.

B. Types, sizes and channels as indicated and required for each application, with fittings that match and mate with raceways.

## 2.5 BOXES, ENCLOSURES AND CABINETS

A. Available Manufacturers:

1. Cooper Crouse-Hinds; Div. Of Cooper Industries, Inc.
2. Emerson/General Signal; Appleton Electric Company.
3. Erickson Electrical Equipment Co.
4. Hoffman.
5. Hubbell, Inc.; Killark Electric Manufacturing Co.
6. O-Z/Gedney; Unit of General Signal.
7. RACO; Division of Hubbell, Inc.
8. Spring City Electrical Manufacturing Co.
9. Thomas & Betts Corporation.
10. Walker Systems Inc.; Wiremold Company (The).

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast Metal Outlet and Device Bopxes: NEMA FB 1, Type FD, with gasketed cover.

D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

E. Floor Boxes: Cast metal, fully adjustable, rectangular.

F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

G. Cast Metal Pull and Junction Boxes: NEMA FP 1 cast aluminum with gasketed cover.

H. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and associated hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

I. Pull boxes for Telephone and Signal System Raceways: ANSI/EIA/TIA-569A

## 2.6 FACTORY FINISHES

- A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard prime-coat finish ready for field painting.

## PART 3 - EXECUTION

### 3.1 RACEWAY APPLICATION

- A. Outdoors: Use the following wiring methods, except as specifically noted otherwise.
  - 1. Exposed: Rigid steel or IMC.
  - 2. Concealed: Rigid steel or IMC.
  - 3. Underground, Single Run: RNC.
  - 4. Underground, Grouped: RNC.
  - 5. Connection to Vibrating Equipment (including transformers and hydraulic, pneumatic, electric solenoid, or motor driven equipment): LFMC.
  - 6. Boxes and Enclosures: NEMA 250, Type 3R or 4.
- B. Indoors: Use the following wiring methods:
  - 1. IMC for all purposes and in all applications except where specifically excluded, or where alternate methods are specified below.
  - 2. Utilize EMT for:
    - a. Main and submain feeders.
    - b. Branch feeders.
    - c. Lighting and appliance branch circuitry.
  - 3. Exposed lighting and appliance branch circuitry runs in finished spaces
  - 4. Refer to appropriate Sections of Division 26 for additional requirements relating to wiring methods for control/signal transmission, fire alarm systems, telecommunications, and other communication and alarm system distribution.
  - 5. Wiring methods listed above shall be restricted as follows:
    - a. Exclude EMT from concrete embedment, from locations where subject to mechanical damage and from exposed locations in finished spaces.
    - b. Exclude surface metal raceway from concealed installations, from locations where subject to mechanical damage and from wet or damp locations.

- c. Utilize only intermediate or rigid steel conduit from runs in (or opening into) hazardous areas. Comply with electric code requirements regarding sealing fittings, boxes, enclosures as appropriate for the conditions of atmospheric contamination.
6. The following shall be treated as damp or wet locations within building confines, regardless of whether or not a high ambient moisture level is found to exist:
- a. Spaces where any designations indicating weatherproof (WP) or vaporproof (VP) appear on the drawings.
  - b. Loading docks.
  - c. Below waterproofing in slabs applied directly on grade.
  - d. Kitchens up to a height of 18 inches above finished floor.
  - e. Outside of waterproofing in foundation walls in contact with grade.
  - f. Above waterproofing in fill on slabs having no building above.
  - g. Electric work in slabs, walls or suspended ceilings which bound on a space defined as a damp or wet location shall meet the damp or wet location requirements if it enters into, or opens into the damp or wet location in any way.
7. The following shall be interpreted as being "hazardous" locations regardless of actual condition of atmospheric contamination.
- a. The entire floor to ceiling volume of space where any designations indicating "explosion proof" (EP) are shown.
  - b. Electric work located in walls or suspended ceilings which bound on a space defined as a hazardous location shall meet the hazardous location requirements if it enters into, or opens into, the hazardous location in any way.
- C. Minimum Raceway Size: 3/4 inch trade size.
- D. Indicated Raceway Size: Raceway sizes indicated are based on non-flexible conduit. Where flexible type raceways are specified, increase raceway size as required to maintain code mandated maximum conduit fill.
- E. Raceway Fittings: Compatible with raceways and suitable for use and location.
- 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

### 3.2 INSTALLATION

- A. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot water pipes. Install horizontal raceway runs above water and steam piping.
- B. Complete raceway installation before starting conductor installation.
- C. Support raceway as specified in Division 26 Section "Supporting Devices."
- D. Install temporary closures to prevent foreign matter from entering raceway.



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- E. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portion of bends is not visible above the finished slab.
- F. Make bends and offsets so the inside diameter is not reduced. Unless otherwise indicated, keep the legs of a bend in the same plane and the straight legs of offsets parallel.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
  - 1. Install concealed raceways with a minimum of bends in the shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.
- H. Install exposed raceways parallel to or at right angles to nearby surfaces or structural members, and follow the surface contours as much possible.
  - 1. Run parallel or banked raceways together on common supports.
  - 2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- I. Join raceways with fittings designed and approved for the purpose and make joints tight.
  - 1. Use insulating bushings to protect conductors.
- J. Tighten set screws of threadless fittings with suitable tool.
- K. Equip all raceways, including those embedded in concrete with expansion fittings having flexible grounding bonds bypassing sliding parts. Arrange expansion fittings on concrete embedded raceways so that sliding action is not impeded.
- L. Terminations:
  - 1. Where raceways are terminated with locknuts and bushings, align the raceway to enter squarely, and install the locknuts with dished part against the box. Use two locknuts, one inside and one outside box.
  - 2. Where terminating in threaded hubs, screw the raceway or fitting tight into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align the raceway so the coupling is square to the box, and tighten the chase nipple so no threads are exposed.
- M. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or monofilament plastic line having not less than 200-lb (90 kg) tensile strength. Leave not less than 12 inches (300 mm) of slack at each end of the pull wire.

- N. Telephone and Signal System Raceways 2-Inch Trade Size (DN 53) and Smaller: In addition to the above requirements, install in maximum lengths of 100 feet (30 m) and with a maximum of two 90-degree bends or equivalent. Install pull or junction boxes where necessary to comply with these requirements. Pull or junction boxes shall be sized in accordance with ANSI/EIA/TIA-569A guidelines.
  - O. Install raceway sealing fittings according to the manufacturer's written instructions. Locate fittings at suitable, approved, accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points and elsewhere as indicated:
    - 1. Where conduits pass from warm locations to cold locations, such as the boundaries of refrigerated spaces and air-conditioned spaces.
    - 2. Where otherwise required by the NFPA70.
  - P. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches (150 mm) above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.
  - Q. Flexible Connections: Use maximum of 6 feet (1.8 m) of FMC for recessed and semi-recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in wet or damp locations. Install separate ground conductor across flexible connections.
  - R. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.
  - S. Set floor boxes level and flush with finished floor surface.
  - T. Install hinged cover enclosures and cabinets plumb. Support at each corner.
  - U. To the extent that circuitry cannot be embedded in concrete slabs and fill, floor and wall mounted outlets shall be supplied in conformance with so-called "poke through system" criteria as described below. Outlets supplied from a specialty cast-in-floor raceway system constitute an exception to this criteria.
- 3.3 LOCATING AND ROUTING CIRCUITRY:
- A. All circuitry shall be run concealed except that it shall be run exposed:-
    - 1. Horizontally at the ceiling of permanently unfinished spaces which are not assigned to mechanical or electrical equipment.
    - 2. Horizontally and vertically in mechanical equipment spaces.
    - 3. Horizontally and vertically in electric equipment rooms.

4. Where specifically noted on the drawings.

B. Concealed circuitry shall be so located that building construction materials can be applied over its thickest elements without being subject to spalling or cracking.

### 3.4 INSTALLING JUNCTION, PULL AND OUTLET BOXES:

A. Apply junction and pull boxes in accordance with the following:-

1. Include pull boxes in long straight runs of raceway to assure that cables are not damaged when they are pulled in.
2. Include junction and pull boxes to assure a neat and workmanlike installation of raceways.
3. Include junction and pull boxes to fulfill requirements pertaining to the limitations to the number of bends permitted in raceway between cable access points, the accessibility of cable joints and splices, and the application of cable supports.
4. Where the wires and cables following the same routing are indicated as running through separate pull boxes, it shall be understood that a segregation of the wires and cables is required. Separately indicated pull boxes may be incorporated into single boxes on condition that segregation is maintained by barriers of the type hereinafter specified.
5. Include all required junction and pull boxes regardless of indications on the drawings (which, due to symbolic methods of notation, may omit to show some of them).

B. Apply outlet boxes in accordance with the following:-

1. Unless noted below or otherwise specifically indicated, include a separate outlet box for each individual wiring device, lighting fixture and signal or communication system outlet component. Outlet boxes supplied attached to lighting fixtures shall not be used as replacements for the boxes specified herein unless they are specifically rated to accept "through circuit" building wires.
2. A continuous row of fixtures of the end-to-end channel type, designed for "through wiring," and wired in accordance with the specifications hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.
3. A series of separate fixtures, designed for "through wiring," spaced not more than 2 feet (600mm) apart, and interconnected with conduit or raceway and circuitry which is in accordance with the specifications hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.
4. Connection to recessed ceiling fixtures supplied with pigtails may be arranged so that more than one, but not more than four, such fixtures are connected into a single outlet box. When adopting this procedure:-

- a. Utilize an outlet box no smaller than 4-11/16 inches (119mm) square by 2-1/8 inches (54 mm) deep.
  - b. Allow no fixture to be supplied from an outlet box in another room.
5. Multiple local switches indicated at a single location shall be gang mounted in a single outlet box.
  6. Include all required outlet boxes regardless of indications on the drawings (which due to symbolic methods of notation, may omit to show some of them).
  7. Regardless of any indications on the drawings, flush wall mounted outlet boxes shall not be set back-to-back in fire rated walls or partitions, even if they are displaced vertically. Such outlets shall be offset horizontally by 24 inches (610mm) or as otherwise required to maintain the fire rating.
  8. Exclude "through-the-wall" collar type outlet boxes for flush devices indicated back-to-back in non-fire rated partitions or walls. Where necessary to accommodate box depths, outlets shown back-to-back shall be horizontally offset.
- C. Install junction boxes, pull boxes and outlet boxes in accordance with the following:-
1. Exclude surface mounted outlet boxes in conjunction with concealed circuitry.
  2. Exclude unused circuitry openings in junction and pull boxes. In larger boxes each such opening shall be closed with a galvanized sheet steel plate fastened with a continuous weld all around. In small outlet type boxes, utilize plugs as specified for such boxes.
  3. Close up all unused circuitry openings in outlet boxes. Unused openings in cast boxes shall be closed with approved cast metal threaded plugs. Unused openings in sheet metal boxes shall be closed with sheet metal knock-out plugs.
  4. Pack "through the wall" collar type outlet boxes with a sound deadening, non-hardening, non-hygroscopic, non-combustible, high dielectric stuffing material manufactured specifically for the purpose.
  5. Equip outlet boxes used in circuitry operating in the range of 250 to 300 volts to neutral with barriers to separate wiring devices connected to different phase legs.
  6. Outlet boxes for switches shall be located at the strike side of doors. Indicated door swings are subject to field change. Outlet boxes shall be located on the basis of final door swing arrangements.
  7. Boxes and plaster covers for duplex receptacles shall be arranged for vertical mounting of the receptacle.
  8. Equip outlet boxes used for devices which are connected to wires of systems supplied by more than one set of voltage characteristics with barriers to separate the different systems.

- D. Barriers in junction and pull boxes of outlet size shall be of the same metal as the box.
- E. Barriers in junction and pull boxes which are larger than outlet size shall be of polyester resin fiberglass of adequate thickness for mechanical strength but in no case less than 1/4 inch (6.5mm). Each barrier shall be mounted, without fastenings, between angle iron guides so that they may be readily removed.

### 3.5 MOUNTING HEIGHTS:

- A. Heights of all wall mounted outlets and equipment shall be in accordance with the following list. (Dimensions are above finished floor unless noted.)
  - 1. Receptacle or telephone outlet in field constructed wall, partition or column unless otherwise specified below -- 18 inches (45 cm) to centerline.
  - 2. Receptacle or telephone outlet in mechanical spaces, electric switchboard rooms, electric closets -- 60 inches (150 cm) to centerline.
  - 3. Toggle switch outlet in field constructed wall partition or column -- 46 inches (117 cm) to centerline.
  - 4. Bracket lighting outlets, except for "over door" -- 90 inches (228 cm) to centerline.
  - 5. Bracket lighting outlet over door -- as required to center outlet between top surface of door lintel and underside of ceiling.
  - 6. Wall exit sign except for over door -- 90 inches (228 cm) to centerline.
  - 7. Exit sign over door -- As required to center sign between top surface of door lintel and underside of ceiling.
  - 8. Outlet for any signal system device other than fire alarm station requiring manual operation -- 46 inches (117 cm) to centerline.
  - 9. Manual fire alarm station -- 46 inches (117 cm) to centerline.
  - 10. Outlet for any signal system visual or sounding device other than fire alarm visual device or visual/sounding device -- As required for device to clear underside of ceiling by 1 inch (25 mm).
  - 11. Outlet for fire alarm visual device -- Visual device 80 inches (203 cm) AFF, except as otherwise noted.
  - 12. Clock outlet -- As required for clock to clear underside of ceiling by 1 inch (25 mm).
- B. Architectural drawings and field instructions issued by the Architect take precedence over the above list and shall be adhered to.

### 3.6 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, to ensure that coatings, finishes, and cabinets are without damage or deterioration at Substantial Completion.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
  - 2. Repair damage to PVC or paint finishes with matching touch-up coating recommended by the manufacturer.

### 3.7 CLEANING

- A. After completing installation of exposed, factory-finished raceways and boxes, inspect exposed finishes and repair damaged finishes.

END OF SECTION 26 05 33

## SECTION 26 05 43 - UNDERGROUND DUCTS AND UTILITY STRUCTURES

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes underground conduits and ducts, duct banks, pull boxes and handholes and other underground utility structures.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 2. This section is a part of each Division 26.

#### 1.3 SYSTEM DESCRIPTION

- A. Underground Ducts: Plastic conduit encased in concrete Insert Option Here.

#### 1.4 SUBMITTALS

- A. Product Data: For metal accessories for handholes, conduit and duct, and miscellaneous components.
- B. Shop Drawings: Show details and design calculations for precast manholes and handholes, including reinforcing steel. Stamp drawings with seal of registered professional structural engineer.
- C. Certificate for concrete and steel used in underground precast concrete utility structures, according to ASTM C 858.
- D. Product Test Reports: Indicate compliance with ASTM C857 and ASTM C858.
- E. Record Documents: Show dimensioned locations of underground ducts, handholes, and manholes.

#### 1.5 QUALITY ASSURANCE

- A. Listing and Labeling: Provide products specified in this Section that are Underwriters Laboratories listed and labeled.
  - 1. The Terms "Listed" and "Labeled": As defined in the "National Electrical Code," Article 100.

B. Comply with New York City Electrical Code.

C. Comply with ANSI C2.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver ducts to site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.

B. Store precast concrete units at site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.

C. Lift and support precast concrete units only at designated lifting or supporting points.

#### 1.7 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by City of New York or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated.

1. Notify Commissioner not less than 2 days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Commissioner's written permission.

#### 1.8 COORDINATION

A. Coordinate layout and installation of ducts, manholes, and handholes with final arrangement of other utilities as determined in the field.

B. Coordinate elevations of duct and duct-bank entrances into manholes and handholes with final profiles of conduits as determined by coordination with other utilities and underground obstructions. Revise locations and elevations as required to suit field conditions and to ensure duct runs drain to manholes and handholes, and as approved by Commissioner.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering the specified products that may be incorporated in the Work include, but are not limited to, the following:

1. Underground Precast Concrete Utility Structures:

a. Precast Division; Carder Concrete Products.

b. Christy Concrete Products, Inc.



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- c. Elmhurst-Chicago Stone Co.
- d. Riverton Concrete Products.
- e. A. Rotondo & Sons, Inc.
- f. Rotondo/Penn-Cast, Inc.
- g. Smith-Midland Corp.
- h. Utility Vault Co.
- i. Wausau Concrete Co.

2. Frames and Covers:

- a. Campbell Foundry Co.
- b. East Jordan Iron Works, Inc.
- c. McKinley Iron Works, Inc.
- d. Neenah Foundry Co.

3. Nonmetallic Ducts:

- a. Amco Corp.
- b. Breeze-Illinois, Inc.
- c. CANTEX, Inc
- d. Carlon; Lamson & Sessions Company.
- e. Pipe & Plastic Group; Certainteed Products Corp.

2.2 CONDUIT AND DUCT

- A. Rigid Plastic Underground Conduit: UL 651A, Type EB PVC.
- B. Rigid Plastic Conduit: NEMA TC 2, Schedule 40 or Schedule 80 PVC, rated for use with 90 deg C conductors under all installation conditions.
- C. Rigid Steel Conduit: ANSI C80.1, galvanized.
- D. Plastic-Coated Rigid Steel Conduit and Fittings: NEMA RN 1.
- E. PVC Conduit Fittings: NEMA TC 3.
- F. Manufactured Bends: Not less than 36-inch (900 mm.) radius.

### 2.3 PULL BOXES AND HANDHOLES

- A. Cast Metal Boxes: Cast aluminum, sized as indicated, with outside flanges and recessed, gasketed cover for flush mounting. Nonskid finish on cover.
- B. Cover Legend: High voltage, electric, signal or other as directed by the Commissioner.

### 2.4 UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES

- A. Where field poured manholes or handholes have been indicated on the drawings, precast units of equivalent size may be substituted, subject to compliance with all requirements specified in this Section.
- B. Precast Units: Interlocking, mating sections, complete with accessory items, hardware, and features as indicated. Include concrete knockout panels for conduit entrance and sleeve for ground rod.
- C. Design structure according to ASTM C 858.
- D. Structural Design Loading: ASTM C 857, Class A-16.
- E. Fabricate according to ASTM C 858.
- F. Joint Sealant: Continuous extrusion of asphaltic butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand the maximum hydrostatic pressures at the installation location with the ground water level at grade.
- G. Source Quality Control: Inspect structures according to ASTM C 1037.

### 2.5 ACCESSORIES

- A. Duct Supports: Rigid PVC spacers selected to provide minimum duct spacings and concrete cover depths indicated, while supporting ducts during concreting.

### 2.6 CONSTRUCTION MATERIALS

- A. Concrete: Conform to Division 26 Section "Common Work Results for Electrical " for concrete and reinforcing.
  - 1. Strength: 3,000 psi (20.7 MPa) minimum 28-day compressive strength.
  - 2. Aggregate For Duct Encasement: 3/8-inch (10 mm) maximum size.

## PART 3 - EXECUTION

### 3.1 APPLICATION

- A. Underground Duct Banks: Concrete encased rigid plastic underground conduit, except as noted below.

- B. Duct Banks Under Paved Areas Open To Regular Vehicular Traffic: Reinforced concrete encased rigid plastic underground conduit.
- C. Handholes: Cast-in-place concrete or underground precast concrete utility structures.

### 3.2 EXAMINATION

- A. Examine site to receive ducts and manholes for compliance with installation tolerances and other conditions affecting performance of the underground ducts and manholes. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.3 EARTHWORK

- A. Excavation and Backfill: Conform to Division 26, Section "Common Work Results for Electrical."
- B. Restore surface features at areas disturbed by excavation, and reestablish original grades except as otherwise indicated. Replace removed sod as soon as possible after backfilling is completed. Restore all areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, or mulching.
- C. Restore disturbed paving.

### 3.4 CONDUIT AND DUCT INSTALLATION

- A. Install nonmetallic conduit and duct as indicated according to manufacturer's written instructions.
- B. Slope: Pitch ducts minimum of 4 inches per 100 feet (1:300) to drain toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between 2 manholes to drain in both directions.
- C. Curves and Bends: Use manufactured elbows for stub-ups at equipment and at building entrances. Use manufactured long sweep bends with a minimum radius of 25 feet (7.5 m) both horizontally and vertically at other locations.
- D. Make joints in ducts and fittings watertight according to manufacturer's instructions. Stagger couplings so those of adjacent ducts do not lie in the same plane.
- E. Duct Entrances to Handholes: Space end bells approximately 10 inches (250 mm) on center for 5-inch (125 mm) ducts and varied proportionately for other duct sizes. Change from regular spacing to end-bell spacing 10 feet (3 m) from the end bell without reducing duct line slope and without forming a trap in the line. Grout end bells into manhole walls from both sides to provide watertight entrances.
- F. Building Entrances: Transition from underground duct to conduit 10 feet (3 m) minimum outside the building wall. Use fittings manufactured for the purpose. Follow appropriate installation instructions below.

1. **Concrete-Encased Ducts:** Install reinforcing in duct banks passing through disturbed earth near buildings and other excavations. Coordinate duct bank with structural design to support duct bank at wall without reducing structural or watertight integrity of building wall.
  2. **Waterproofed Wall and Floor Entrances:** Install a watertight entrance-sealing device with the sealing gland assembly on the inside. Anchor device into masonry construction with 1 or more integral flanges. Secure membrane waterproofing to the device to make permanently watertight.
- G. **Concrete-Encased Nonmetallic Ducts:** Support on plastic separators coordinated with duct size and required duct spacing, and install according to the following:
1. **Separator Installation:** Space separators close enough to prevent sagging and deforming of ducts, and secure separators to the earth and to ducts to prevent floating during concreting. Do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
  2. **Concreting:** Spade concrete carefully during pours to prevent voids under and between conduits and at exterior surface of envelope. Do not use power-driven agitating equipment unless specifically designed for duct bank application. Pour each run of envelope between manholes or other terminations in 1 continuous operation. When more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch (18 mm) reinforcing rod dowels extending 18 inches (450 mm) into the concrete on both sides of joint near the corners of the envelope.
  3. **Reinforcing:** Reinforce duct banks where they cross disturbed earth, where they cross over or under underground utilities or other obstructions and where indicated.
  4. **Forms:** Use the walls of the trench to form the side walls of the duct bank where the soil is self-supporting and concrete envelope can be poured without soil inclusions, otherwise, use forms.
  5. **Minimum Clearances Between Ducts:** 3 inches (75 mm) between ducts and exterior envelope wall, 2 inches (50 mm) between ducts for like services, and 4 inches (100 mm) between power and signal ducts.
  6. **Depth:** Except as otherwise indicated, install top of duct bank at least 30 inches (750 mm) below finished grade. Increase cover where required by field conditions. Clearance may be reduced (to a minimum of 18" (450 mm)) where passing over other utilities or obstructions or where necessary to avoid low points. Reinforce the concrete where clearance is so reduced.
- H. **Stub-Ups:** Use rigid steel conduit for stub-ups to equipment. For equipment mounted on outdoor concrete pads, extend steel conduit a minimum of 5 feet (1.5 m) from edge of pad. Install insulated grounding bushings on the terminations. Couple steel conduits to the ducts with adapters designed for the purpose and then encase coupling with 3 inches (75 mm) of concrete.

- I. Sealing: Provide temporary closure at terminations of ducts that are wired under this Project. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15 psi (1.03 MPa) hydrostatic pressure.
- J. Pulling Cord: Install 100-pound (45 kg) test nylon cord in ducts, including spares.

### 3.5 UNDERGROUND UTILITY STRUCTURE INSTALLATION

- A. Elevation: Install manholes with roof top at least 15 inches (375 mm) below finished grade. Install handholes with depth as indicated. Where indicated, cast handhole cover frame directly into roof of handhole and set roof surface 1 inch (25 mm) above grade.
- B. Access: Install cast-iron frame and cover. For manholes, use 30-inch (750 mm) cover except as indicated. Use 30-inch (750 mm) cover for handholes, except use 24-inch (600 mm) covers for 24-inch (600 mm) by 24-inch (600 mm) handholes. Install brick chimney to support frame and cover and to connect cover with roof opening. Provide moisture-tight masonry joints and waterproof grouting for cast-iron frame to chimney. Set frames in paved areas and traffic ways flush with finished grade. Set other frames 1 inch (25 mm) above finished grade.
- C. Hardware: Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cable and conductors and as indicated.
- D. Field-Installed Bolting Anchors: Do not drill deeper than 3-7/8 inches (96 mm) for anchor bolts installed in the field. Use a minimum of 2 anchors for each cable stanchion.
- E. Grounding: Install ground rod through floor in each structure with top protruding 4 inches (100 mm) above floor. Seal the floor opening against water penetration with waterproof nonshrink grout. Ground exposed metal components and hardware with bare copper ground conductor. Train conductors neatly around corners. Install on walls and roof using cable clamps secured with expansion anchors.
- F. Cast-In-Place Underground Structure Installation: Conform to applicable requirements of Division 26 Section "Common Work Results for Electrical."
  - 1. Finish interior surfaces with a smooth troweled finish.
  - 2. Windows for Future Duct Connections: Form and pour concrete knock-out panels 1-1/2 to 2 inches (37 to 50 mm) thick, arranged as indicated.
- G. Precast Concrete Underground Structure Installation: Install as indicated, according to manufacturer's written instructions and ASTM C 891.
  - 1. Install units plumb and level and with orientation and depth coordinated with arrangement of connecting ducts to minimize bends and deflections required for proper entrances.
  - 2. Support units on a level bed of crushed stone or gravel, graded from the 1-inch (25 mm) sieve to the No. 4 sieve and compacted to same density as adjacent undisturbed earth.

### 3.6 EXCAVATION FOR UNDERGROUND CONDUIT BANKS

- A. Slope sides of excavations to comply with local codes and ordinances. Shore and brace as required for stability of excavation.
- B. Shoring and Bracing: Establish requirements for trench shoring and bracing to comply with local codes and authorities. Maintain shoring and bracing in excavations regardless of time period excavations will be open.
  - 1. Remove shoring and bracing when no longer required. Where sheeting is allowed to remain, cut top of sheeting at an elevation of 30 inches (750 mm) below finished grade elevation.
- C. Install sediment and erosion control measures in accordance with local codes and ordinances.
- D. Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
  - 1. Do not allow water to accumulate in excavations. Remove water to prevent softening of bearing materials. Provide and maintain dewatering system components necessary to convey water away from excavations.
  - 2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey surface water to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.
- E. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.
  - 1. Locate and retain soil materials away from edge of excavations. Do not store within drip-line of trees indicated to remain.
  - 2. Remove and legally dispose of excess excavated materials and materials not acceptable for use as backfill or fill.
- F. Excavation for Underground Vaults and Electrical Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.25 foot (75 mm); plus a sufficient distance to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
  - 1. Excavate, by hand, areas within drip-line of large trees. Protect the root system from damage and dry-out. Maintain moist conditions for root system and cover exposed roots with burlap. Paint root cuts of 1 inch (25 mm) in diameter and larger with emulsified asphalt tree paint.
  - 2. Take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed.

G. Trenching: Excavate trenches for electrical installations as follows:

1. Excavate trenches to the uniform width, sufficiently wide to provide ample working room and a minimum of 6 to 9 inches (150 to 225 mm) clearance on both sides of raceways and equipment.
2. Excavate trenches to depth required to accommodate the installation of conduit (duct banks) in compliance with the requirements of Section 26 05 43.
3. Limit the length of open trench to that in which installations can be made and the trench backfilled within the same day.
4. Where rock is encountered, carry excavation below required elevation and backfill with a layer of crushed stone or gravel prior to installation of raceways and equipment. Provide a minimum of 6 inches (150 mm) of stone or gravel cushion between rock bearing surface and electrical installations.

H. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 deg F (1 deg 2 C).

I. Backfilling and Filling: Place soil materials in layers to required subgrade elevations for each area classification listed below, using materials specified in Part 2 of this Section.

1. Under walks and pavements, use a combination of subbase materials and excavated or borrowed materials.
2. Under building slabs, use drainage fill materials.
3. Under piping and equipment, use subbase materials where required over rock bearing surface and for correction of unauthorized excavation.
4. For raceways less than 30 inches (750 mm) below surface of roadways, provide 4-inch (100mm)thick concrete base slab support. After installation of raceways, provide a 4-inch (100mm)thick concrete encasement (sides and top) prior to backfilling and placement of roadway subbase.
5. Other areas, use excavated or borrowed materials.

J. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Inspection, testing, approval, and locations of underground utilities have been recorded.
2. Removal of concrete formwork.
3. Removal of shoring and bracing, and backfilling of voids.
4. Removal of trash and debris.

- K. **Placement and Compaction:** Place backfill and fill materials in layers of not more than 8 inches (200 mm) in loose depth for material compacted by heavy equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- L. **Before compaction,** moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification specified below. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- M. **Place backfill and fill materials evenly adjacent to structures, piping, and equipment to required elevations.** Prevent displacement of raceways and equipment by carrying material uniformly around them to approximately same elevation in each lift.
- N. **Compaction:** Control soil compaction during construction, providing minimum percentage of density specified for each area classification indicated below.
  - 1. **Percentage of Maximum Density Requirements:** Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture-density relationship (cohesive soils), determined in accordance with ASTM D 1557 and not less than the following percentages of relative density, determined in accordance with ASTM D 2049, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).
    - a. **Areas Under Structures, Building Slabs and Steps, Pavements:** Compact top 12 inches (300 mm) of subgrade and each layer of backfill or fill material to 90 percent maximum density for cohesive material, or 95 percent relative density for cohesionless material.
    - b. **Areas Under Walkways:** Compact top 6 inches of subgrade and each layer of backfill or fill material to 90 percent maximum density for cohesive material, or 95 percent relative density for cohesionless material.
    - c. **Other Areas:** Compact top 6 inches (150 mm) of subgrade and each layer of backfill or fill material to 85 percent maximum density for cohesive soils, and 90 percent relative density for cohesionless soils.
  - 2. **Moisture Control:** Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water. Apply water in minimum quantity necessary to achieve required moisture content and to prevent water appearing on surface during, or subsequent to, compaction operations.
- O. **Subsidence:** Where subsidence occurs at electrical installation excavations during the period 12 months after Substantial Completion, remove surface treatment (i.e., pavement, lawn, or other finish), add backfill material, compact to specified conditions, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent areas.



### 3.7 CONCRETE ENCASEMENT FOR UNDERGROUND CONDUIT BANKS

- A. Utilize the sides of the trench in formwork for underground conduit banks to the maximum extent possible. Utilize a splashboard to divert the concrete flow away from the trench sides to avoid dislodging soil and stones.
- B. Provide reinforcement where required. Verify that any required reinforcement is installed prior to commencing placement of concrete.
- C. Place concrete in accordance with the following:
  - 1. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
  - 2. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.
  - 3. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions or low temperatures.
  - 4. 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.
    - a. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
    - b. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
  - 5. Installation of Fire-Stopping Sealant: Install sealant, including forming, packing, and other accessory materials, to fill openings around electrical services penetrating floors and walls, to provide fire-stops with fire-resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

### 3.8 FIELD QUALITY CONTROL

- A. Testing: Demonstrate capability and compliance with requirements upon completion of installation of underground duct and utility structures.

1. **Grounding:** Test Hanholes grounding to ensure electrical continuity of bonding and grounding connections. Measure ground resistance at each ground rod and report results. Use an instrument specifically designed for ground-resistance measurements.
  2. **Duct Integrity:** Rod ducts with a mandrel 1/4 inch (6 mm) smaller in diameter than internal diameter of ducts. Where rodding indicates obstructions in ducts, remove the obstructions and retest.
  3. **Water Tightness:** Make internal inspection of Hanholes 3 months after completion of construction for indications of water ingress. Where leakage is noted, remove water and seal leak sources. Reinspect after 2 months and reseal remaining leak sources. Repeat process at 2 month intervals until leaks are corrected.
- B. Inspect installed components for damage and faulty work, including the following:
1. Concrete for underground conduit runs.
  2. Excavation for underground conduit runs.
- C. Correct installations where possible, and retest to demonstrate compliance. Otherwise, remove and replace defective products and retest.
- 3.9 **CLEANING**
- A. Pull brush through full length of ducts. Use round bristle brush with a diameter 1/2 inch (12 mm) greater than internal diameter of duct.

END OF SECTION 26 05 43

**SECTION 26 05 48 - SEISMIC CONTROLS FOR ELECTRICAL WORK**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. This Section includes general and procedural requirements for the design of seismic control for electrical components and installations.
- B. Provide seismic restraints for every electrical system including conduit and equipment within the building on grade, and on the roof of the building, complete, as shown and specified per Contract Documents.
- C. Seismic bracing and isolation materials shall be of the same manufacturer and shall be certified by the manufacturer.
- D. It is the intent of the Section of the specification to keep all mechanical, electrical, plumbing, and fire protection building system components in place and operational during a seismic event.
  - 1. It shall be understood that the requirements of this seismic section are complementary to requirements delineated elsewhere for the support, fastening and isolating of equipment, conduit, ductwork and piping work. Nothing on the drawings or specifications shall be interpreted as a reason to waive the requirements of this seismic section.
- E. All such systems must be installed in strict accordance with seismic codes, component manufacturer's and building construction standards. Whenever a conflict occurs between the manufacturers or construction standards, the most stringent shall apply.
- F. This specification is considered to be minimum requirements for seismic consideration.
- G. This project requires compliance with the New York City Building Code, Use Group I, and Seismic Design Category B.
- H. As part of the work, this trade shall engage the services of an independent Professional Engineer Licensed in the state of New York, with experience in the field of equipment support and seismic restraints.
- I. This work shall be coordinated with the vibration isolation requirements as specified under another section of the work.
- J. Where reference is made to an International Codes; such as International Building Code (IBC), or any other International Code published by the International Code Council (ICC), it shall mean the respective ICC based code as adopted and amended by the city of New York.

## 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Section 26 05 00 - Common Work Results for Electrical.
- C. This section is a part of Each Division 26 Section.

## 1.3 APPLICABLE PUBLICATIONS CODES AND STANDARDS

- A. International Building Code, as amended by local jurisdiction (IBC).
- B. New York City Building Code.
- C. New York City Electrical Code.
- D. American National Standard Institute (ANSI):
- E. ASCE 7, American Society of Civil Engineers (ASCE):
- F. American Society of Mechanical Engineers (ASME):
- G. American Society for Testing and Materials (ASTM):
- H. National Fire Protection Association (NFPA):
- I. Occupational Safety and Health Administration (OSHA).
- J. Underwriters Laboratories (UL).

## 1.4 DEFINITIONS

- A. Life Safety Systems:
  - 1. All systems involved with fire protection including smoke dampers and smoke exhaust systems.
  - 2. Emergency or legally required standby power system.
  - 3. All mechanical systems that support the operation of or are connected to emergency or standby power equipment including all lighting, generator, transfer switches and transformers.
- B. Anchor: A device, such as an expansion bolt, for connecting conduit or equipment bracing members into the structure of a building.
- C. Approved Agency: An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved.

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- D. **Attachments, Seismic:** Means by which components and their supports are secured or connected to the seismic-force-resisting system of the structure. Such attachments include anchor bolts, welded connections and mechanical fasteners.
- E. **Bracing:** Metal channels, cable or hanger angles that prevent ducts and pipe from breaking away from the structure during an earthquake. See also Longitudinal Bracing and Transverse Bracing. Together, they resist lateral loads from any direction.
- F. **Certificate of Compliance:** A certification stating that materials and products meet specified standards or that work was done in compliance with approved construction documents.
- G. **Component:** A part or element of an architectural and electrical, mechanical, or structural system.
- H. **Component, equipment:** A mechanical or electrical components or element that is part of a mechanical and/or electrical system within or without a building system.
- I. **Dynamic properties of piping:** The tendency of pipe to change in weight and size because of the movement and temperature of fluids in them. This does not refer to movement due to seismic forces.
- J. **Equipment:** Systems associated with ducts, pipe, and conduit.
- K. **Hazardous Contents:** A material that is toxic or potentially explosive and in sufficient quantity to pose a significant life-safety threat to the general public if an uncontrolled release was to occur.
- L. **Inspection Certificate:** An identification applied on a product by an approved agency containing the name of the manufacturer, the function and performance characteristics, and the name and identification of an approved agency that indicates that the product or material has been inspected and evaluated by an approved agency.
- M. **Isolation System:** The collection of structural elements that includes individual isolator units, structural elements that transfer force between elements of the isolation system and connections to other structural elements.
- N. **Label:** An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the same and identification of an approved agency and that indicated that the representative sample of the product or materials has been tested and evaluated by an approved agency.
- O. **Lateral Forces:** A force acting on equipment or raceways in the horizontal plane. This force can be in any direction.
- P. **Licensed Professional Engineer:** An independent, qualified, licensed Professional Engineer having PE registration from the same state as the project, with significant experience in the field of seismic design, equipment support and seismic restraints.

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- Q. Longitudinal Bracing: Bracing that prevents equipment or raceways from moving in the direction of its run.
- R. Longitudinal Force: A lateral force that happens to be in the same direction as the equipment or raceways.
- S. Manufacturer's Designation: An identification applied on a product by the manufacturer indicating that a product or material complies with a specified standard or set of rules.
- T. Occupancy Importance Factor: A factor assigned to each structure according to its Seismic Use Group as prescribed in New York City Building Code, Chapter 16.
- U. Positive Attachment: A mechanical device designed to resist seismic forces that connected a non-structural element, such as equipment or raceways, to a structural element, such as a beam. Bolts and screws are examples of positive attachments. Glue and friction due to gravity do not create positive attachments.
- V. Raceways: Electrical raceways; e.g., conduit, cable trays, troughs.
- W. Seismic Design Category: A classification assigned to a structure based on its Seismic Use Group and the severity of the design earthquake ground motion at the site.
- X. Seismic Force: The assumed forces prescribed herein, related to the response of the structure to earthquake motions, to be used on the design of the structure and its components.
- Y. Seismic Use Group: A classification assigned to a building based on its use as defined in New York City Building Code, Chapter 16.
- Z. Seismic: Related to an earthquake. Seismic loads on a structure are caused by wave movements in the earth during an earthquake.
- AA. Site Class: A classification assigned to a site based on the types of soils present and their engineering properties as defined in New York City Building Code, Chapter 16.
- BB. Special Inspection, Continuous: The full-time observation of work requiring special inspection by an approved special inspector who is present in the area where the work is being performed.
- CC. Special Inspection, Periodic: The part-time or intermittent observation of work requiring special inspection by an approved special inspector who is present in the area where the work has been or is being performed and at the completion of the work.
- DD. Special Inspection: Inspection as herein required of the materials, installation, fabrication, erection or placement of components and connections requiring special documents and referenced standards.
- EE. Transverse bracing: Bracing that prevents equipment or raceways from moving from side to side.

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1.5 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract.
- B. Prior to purchasing any equipment or materials, a list of their manufacturers shall be submitted for review.
- C. Shop Drawings:
1. Drawings showing equipment base constructions including dimensions, structural member sizes and support point locations.
  2. Drawings showing details of suspension and support for ceiling hung equipment.
  3. Drawings showing methods for isolation of raceways piercing walls and slabs.
  4. Concrete and steel details for bases, including anchor bolt locations.
  5. Number, location and details of seismic restraints and anchors for each piece of equipment and of raceways.
  6. Specific details of restraints, including anchor bolts for mounting and maximum loading at each location for each piece of equipment and lengths of raceways.
- D. Where walls, floors, slabs or supplementary steel work are used for seismic restraint locations, details of acceptable attachment methods for raceways must be included and approved before the condition is accepted for installation. Restraint manufacturers' submittals must include spacing, static loads and seismic loads at all attachment and support points.
- E. Provide Approved Agencies Certificate of Compliance showing compliance with Chapters, 16 and 17 of the New York City Building Code, for all components. Tests shall include anchorage, structural and on line capability from analytical or shaker test method.
1. Where the requirements of this specification cannot be met by any vendor, the contractor will submit a written summary indicating the lack of resources clearly indicating that none of the specified, listed or other vendors known to the contractors meet the compliance, testing and certification portions of the New York City Building Code, Chapters 16 and 17. Special inspections shall still be conducted even if no vendors meet the requirements.
- F. The submittal material shall also include copies of descriptive data for all products and materials including, but not limited to, the following:
1. Descriptive Data:
    - a. Catalog cuts and data sheets on specific vibration isolators and seismic restraints to be utilized showing compliance with the specifications.

- b. An itemized list showing the items of equipment or piping to be isolated, the isolator type and model number selected, isolator loading and deflection, and reference to specific drawings showing seismic restraints, base and construction where applicable.
  - c. An itemized list of non-isolated equipment, raceways to be seismically restrained.
  - d. Seismic restraint calculations.
  - e. Seismic restraints for isolated equipment.
  - f. Seismic restraints for non-isolated equipment.
  - g. Certification of seismic restraint designs and installation supervision.
  - h. Certification of seismic attachment of housekeeping pads.
  - i. All equipment (components) requiring IBC certification.
- G. Drawings and calculations (by the licensed professional engineer) substantiating the mounting system, the number and location of seismic restraints and specified details of restraints including anchor bolts for mountings and maximum load (static plus dynamic) expected at each restraint or snubbing device including fastening devices for the seismic restraints which are capable of maintaining equipment, piping or ductwork in a captive position. Restraint devices shall be designed and selected to meet seismic requirements, as defined in the latest New York City Building Code and ASCE 7 as modified by NYC Building Code.
- H. Documents will not be accepted for review unless:
- 1. They include complete information pertaining to appurtenances and accessories.
  - 2. They are submitted as a package where they pertain to related items.
  - 3. They are properly marked with service or function, project name, where they consist of catalog sheets displaying other items which are not applicable.
  - 4. They indicate the project name and address along with the Contractor's name, address and phone number.
  - 5. They are properly marked with external connection identification as related to the project where they consist of standard factory assembly or field installation drawings.
- I. All documents shall be stamped, sealed and signed by the licensed Professional Engineer whose services were engaged by this trade contractor.

#### 1.6 QUALITY ASSURANCE

- A. Seismic restraints shall be provided by a company specializing in vibration isolation and seismic restraints with three years minimum experience.
- B. Testing or calculating (including the combining of tensile and shear loadings) to support seismic restraint designed must be stamped by the licensed Professional Engineer. Testing and calculations must include shear and tensile loads as well as one test or analysis at 45 degrees to the weakest mode.



- C. Component testing must be by an approved agency.
- D. Analysis for anchorage must indicate calculated dead loads, static seismic loads and capacity of materials utilized for connections to equipment and structure. Analysis must detail anchoring methods, bolt diameter, embedment and/or welded length. All seismic restraint devices shall be designed to accept, without failure, the forces acting through the equipment center of gravity. Overtuning moments may exceed forces at ground level.
- E. Internally isolated equipment in lieu of specified isolation and restraint systems must meet the specified isolation and system restraint criteria.
- F. A seismic design Errors and Omissions insurance certificate must accompany the equipment manufacturer's certification. Product liability insurance certificates are not acceptable.
- G. In the event that the equipment is internally isolated and restrained, the entire unit assembly must be seismically attached to the structure. Curb or roof rail mounted equipment must not only have seismic attachment of the equipment must not only have seismic attachment of the equipment to the roof but also to the curb or rails. The attachment and certification thereof shall be by this section.

#### 1.7 DESCRIPTION

- A. All rigidly or resiliently installed equipment, raceways, etc., shall be capable of withstanding the seismic forces to which it might be subjected without permanent displacement of the equipment from the installed position.
- B. Housekeeping pads shall be sized to have a minimum of 6 inches (15 cm) of clearance all around the equipment or 12 bolt diameters, whichever is greater.
- C. All components shall be positively attached to the building structure and be approved by the structural engineer. Positive attachment is defined as a cast-in anchor, a drill-in wedge anchor, a double-sided beam clamp loaded perpendicular to a beam, or a welded or bolted connection to structure. Single sided "C" type beam clamps for support rods of overhead conduit, fire protection or any other equipment are not acceptable on this project as seismic bracing points.
- D. Design Loads:
  - 1. Actual loads shall be calculated but shall not be less than the minimum force and acceleration loads required for the specific category of the project for static mounted components including internal components as part of a manufactured system.

**E. Manufacturer Responsibilities**

1. **Manufacturer of vibration isolation and seismic restraint equipment shall have the following responsibilities. As part of this work, the manufacturer shall engage the services of a licensed Professional Engineer, who shall have the following responsibilities.**
  - a. **Design the vibration isolation and seismic restraint sizes and locations.**
  - b. **Provide piping and equipment isolation systems and seismic restraints as to meet the requirements as specified herein.**
  - c. **Guarantee specified isolation system deflection.**
  - d. **Provide installation instructions, drawings and field supervision to assure proper installation and performance.**
  - e. **Provide certification that the installation of all mounts and restraints meet the project requirements for seismic loading.**
2. **Substitution of internally isolated mechanical equipment in lieu of the specified isolation of this Section must be approved for individual equipment units and is acceptable only if above acceleration loads are certified in writing by the equipment manufacturer and stamped and sealed by a licensed civil or structural engineer.**
3. **All manufacturers providing equipment and/or vibration/seismic control systems must provide a Seismic Design Error and Omissions Insurance Certificate for their firm or their design consultant to certify their ability to provide engineering and design as required by this section.**
4. **All manufacturers including Original Equipment Manufacturers (OEM) are responsible for Seismic Certification and Analysis.**

**F. Contractor Responsibilities**

1. **The Contractor performing the work on equipment and systems in this section of work shall have the following responsibilities.**
2. **As part of the work, this contractor shall engage the services of a licensed professional engineer and shall have the following responsibilities.**
  - a. **He shall select and coordinate the restraints and supports based on the final coordinated drawings showing exact location of piping and equipment and shall coordinate with the project structural engineer to ascertain that the connections to the structure will resist the seismic forces to which they might be subjected.**
  - b. **Coordinate the restraints and supports based on the final coordinated drawings showing exact location of piping and equipment and shall coordinate with the project structural engineer to ascertain that the connections to the structure will resist the seismic forces to which they might be subjected.**

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- c. Participate in the preparation of Coordination Drawings (as specified under another section of this work) to show space requirements for the seismic restraints and supports for the piping, ductwork and equipment.
  - d. Based on the final coordinated drawings showing exact locations of piping, equipment and ductwork, he shall select and coordinate the restraints and supports.
  - e. Be responsible for the performance of all special inspections as required by the IBC, and all other agencies having jurisdiction.
  - f. Identify the components that are part of the Quality Assurance Plan.
    - (i) All electrical components for standby or emergency power systems.
    - (ii) All flammable, combustible and highly toxic piping and their associated electrical systems.
    - (iii) All equipment using combustible or toxic energy sources.
  - g. Identify all Special inspection and Testing.
  - h. List control procedures within the contractor's organization including methods and frequency of reporting and their distribution.
  - i. List personnel and their qualifications exercising control over the seismic aspects of the project.
3. This work shall be coordinated with the vibration isolation requirements as specified under another section of the work.
4. City of New York will perform continuous special inspections for the work described and periodic inspections as required by the New York City Building Code and all other agencies having jurisdiction.
5. Purchased and/or fabricated equipment must be designed to safely accept external forces of load in any direction for all rigidly and resiliently supported equipment, piping and ductwork without failure and permanent displacement of the equipment. Life safety equipment such as emergency generators and other life safety designated equipment must be capable of accepting external forces (as required by the specific design category for the project) in any direction without permanent displacement or failure of the equipment.

## PART 2 - PRODUCTS

Non Applicable.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. All vibration isolators and seismic restraint systems must be installed in strict accordance with the manufacturer's written instructions and all certified submittal data.
- B. Installation of vibration isolators and seismic restraints must not cause any change of position of equipment, piping or ductwork resulting in stresses or misalignment.

- C. No rigid connections between equipment and the building structure shall be made that degrades the noise and vibration control system specified, under another section of the work.
- D. The contractor shall not install any isolated equipment, piping or duct, which makes rigid connections with the building. "Building" includes, but is not limited to, slabs, beams, columns, studs and walls.
- E. Coordinate work with other trades to avoid rigid contact with the building.
- F. Vibration isolation manufacturer shall furnish integral structural steel bases as required. Independent steel rails are not permitted.
- G. Where conduits pass through walls, floors or ceilings, the contractor shall provide wall seals or resilient packed conduit sleeves.
- H. Special and Periodic Inspections shall be conducted and submitted on a timely basis.

### 3.2 EQUIPMENT RESTRAINTS

- A. Equipment shall be isolated and restrained.
- B. Place floor mounted on 4 inches (10 cm) high concrete housekeeping pads properly doweled or expansion shielded to the deck to meet acceleration criteria. Anchor isolators and/or bases to housekeeping pads.
- C. Additional Requirements
  1. The minimum operating clearance under all isolated components bases shall be 2 inches (5 cm).
  2. All floor or wall mounted equipment shall be restrained.

### 3.3 CONDUIT RESTRAINTS

- A. Seismic Restraint of Conduits
  1. All high hazard system and life safety system conduits regardless of size shall be seismically restrained. There are no exclusions for size or distance in this category.
  2. Multiple runs of conduit on the same support shall have distance determined by calculation.
  3. Rod braces shall be used for all rod lengths greater than 3 inches (7 cm).
  4. Clevis hangers shall have spacers placed inside of hanger at seismic brace locations.

5. Where thermal expansion is a consideration, guides and anchors may be used as transverse and longitudinal restraints provided they have a capacity equal to or greater than the restraint loads in addition to the loads induced by expansion or contraction.
6. Hold down clamps must be used to attach conduit to all trapeze members before applying restraints.

### 3.4 INSPECTION

- A. On completion of installation of all vibration isolation and seismic restraint devices herein specified, the local representative of the isolation materials manufacturer shall inspect the completed system and report in writing any installation errors, improperly selected isolation or restraint devices, or other faults that could affect the performance of the system. Contractor shall submit a report to the Commissioner, including the manufacturer's representative's final report, indicating all isolation reported as properly installed or requiring correction, and include a report by the Contractor on steps taken to properly complete the isolation work.
- B. All special inspections on components required to be seismically restrained must be performed in accordance with New York City Building Code and as specified herein.
  1. The City of New York engaged by the contractor shall be responsible for the performance of all special inspection.
- C. Continuous inspection: The full-time observation of work by City of New York pursuant to NYC Building Code. The following pieces of equipment require these inspections:
  1. All equipment using combustible energy sources.
  2. All electric motors, transformers, switchgear unit substations and motor control centers.
  3. Reciprocating and rotating type machinery.
  4. Conduit, 3 inches & larger.
- D. Periodic inspection: intermittent observation of work by City of New York of the following pieces of equipment in compliance with IBC section 1704.
  1. All smoke control systems during construction & prior to concealment.
  2. Isolator units for seismic isolation system.

END OF SECTION 26 05 48

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## SECTION 26 05 53 - ELECTRICAL IDENTIFICATION

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes electrical identification materials and devices required to comply with ANSI C2, NFPA 70 - as amended by state and local codes, OSHA standards, and the requirements of the authorities having jurisdiction.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. This section is a part of each Division 26.

#### 1.3 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.
- B. Schedule of Nomenclature: An index of electrical equipment and system components used in identification signs and labels.
- C. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.

#### 1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70, as amended by state and local codes.
- B. Comply with ANSI A13.1 and NFPA 70 for color-coding.
- C. Comply with ANSI Z535-2, Z535-4, and NFPA 70E.
- D. Comply with ANSI C2.
- E. Comply with 29 CFR 1910.145

## 1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

## PART 2 - PRODUCTS

### 2.1 RACEWAY AND CABLE LABELS

- A. Comply with ANSI A13.1, Table 3, for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
  - 1. Color: Black letters on orange field.
  - 2. Legend: Indicates voltage and service.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- D. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- E. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches (50 mm) wide; compounded for outdoor use.

### 2.2 CONDUCTOR AND COMMUNICATION AND CONTROL-CABLE IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.
- B. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.



- C. Aluminum Wraparound Marker Labels: Cut from 0.014-inch- (0.35-mm-) thick aluminum sheet, with stamped, or embossed legend, and fitted with tabs and matching slots for permanently securing around wire or cable jacket or around groups of conductors.
- D. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch (50 by 50 by 1.3 mm), with stamped legend, punched for use with self-locking nylon tie fastener.
- E. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and polyester or nylon tie for attachment to conductor or cable.
  - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

### 2.3 UNDERGROUND-LINE WARNING TAPE

- A. Description: Permanent, bright-colored, continuous-printed, polyethylene tape.
  - 1. Not less than 6 inches (150 mm) wide by 4 mils (0.102 mm) thick.
  - 2. Compounded for permanent direct-burial service.
  - 3. Embedded continuous metallic strip or core.
  - 4. Printed legend shall indicate type of underground line.

### 2.4 WARNING LABELS, NAMEPLATES AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Engraved Plastic Warning Labels, Nameplates and Signs: Engraving stock, melamine plastic laminate, minimum 1/16 inch (1.6 mm) thick for signs up to 20 sq. in. (129 sq. cm) and 1/8 inch (3.2 mm) thick for larger sizes.
  - 1. Engraved legend with black letters on white face.
  - 2. Punched or drilled for mechanical fasteners.
- C. Baked-Enamel Warning Signs for Interior Use: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for the application. 1/4-inch (6.4-mm) grommets in corners for mounting. Nominal size, 7 by 10 inches (180 by 250 mm).
- D. Exterior, Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch (1-mm) galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch (6.4-mm) grommets in corners for mounting. Nominal size, 10 by 14 inches (250 by 360 mm).
- E. Warning label and sign shall include, but are not limited to, the following legends:
  - 1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."

2. **Workspace Clearance Warning:** "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 48 INCHES (1200 MM)." Adjust clearance dimensions as required for system voltage and equipment configuration.
3. **ARC Flash Warning:** "POTENTIAL ARC FLASH HAZARD - APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT AND TOOLS REQUIRED WHEN WORKING ON THIS EQUIPMENT."

F. **Fasteners for Nameplates and Signs:** Self-tapping, stainless-steel screws or No. 10/32, stainless-steel machine screws with nuts and flat and lock washers.

## 2.5 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. **Cable Ties:** Fungus-inert, self-extinguishing, one-piece, self-locking, Type 6/6 nylon cable ties.

1. **Minimum Width:** 3/16 inch (5 mm).
2. **Tensile Strength:** 50 lb (22.3 kg) minimum.
3. **Temperature Range:** Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. **Color:** Black, except where used for color-coding.

B. **Paint:** Formulated for the type of surface and intended use.

1. **Primer for Galvanized Metal:** Single-component acrylic vehicle formulated for galvanized surfaces.
2. **Primer for Concrete Masonry Units:** Heavy-duty concrete masonry unit block filler.
3. **Primer for Concrete:** Exterior concrete and masonry primer.
4. **Enamel:** Exterior semigloss acrylic enamel.

## PART 3 - EXECUTION

### 3.1 APPLICATION

A. **Accessible Raceways and Cables of Auxiliary Systems:** Identify the following systems with color-coded, self-adhesive vinyl tape applied in bands or with snap-around, color-coding bands:

1. **Fire Alarm System:** Red.
2. **Telecommunication System:** Green and yellow.
3. **Control Wiring:** Green and red.

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- B. **Power-Circuit Conductor Identification:** For secondary conductors No. 1/0 AWG and larger in vaults, pull and junction boxes, manholes, and handholes use aluminum wraparound marker labels or non-ferrous metal tags. Identify source and circuit number of each set of conductors. For single conductor cables, identify phase in addition to the above.
- C. **Branch-Circuit Conductor Identification:** Where there are conductors for more than three branch circuits in same junction or pull box, use aluminum wraparound marker labels. Identify each ungrounded conductor according to source and circuit number.
- D. **Ground fault interrupter outlets:** Identify receptacles supplied by ground fault interrupter circuit breakers or by upstream ground fault interrupter receptacles. Use engraved letters on device plate.
- E. **Conductors to Be Extended in the Future:** Attach write-on tags to conductors and list source and circuit number.
- F. **Auxiliary Electrical Systems Conductor Identification:** Identify field-installed alarm, control, signal, sound, intercommunications, voice, and data connections.
  - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
  - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
  - 3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and Operation and Maintenance Manual.
- G. **Locations of Underground Lines:** Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- H. **Warning Labels for Cabinets, Boxes, and Enclosures for Power and Lighting:** Comply with 29 CFR 1910.145 and apply warning signs. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
  - 1. **Equipment with Multiple Power or Control Sources:** Apply to door or cover of equipment including, but not limited to, the following:
    - a. Power transfer switches.
    - b. Controls with external control power connections.
  - 2. **Equipment Requiring Workspace Clearance According to NFPA 70:** Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.
  - 3. **Switchboards, Panelboards, Equipment Control Panels, Meter Socket Enclosures, and Motor Control Centers:** Labeled to warn of potential electric arc flash hazards. The label shall be located so as to be clearly visible before examination, adjustment, servicing, or maintenance of the equipment.

4. 480 Volt Switchboards, Panelboards, and Panelboard Backboxes: Identify with "WARNING 480 VOLTS".
  5. Generators, Transfer Switches, Panels, Boxes, and Enclosures for Emergency Systems: Identify with "EMERGENCY" in black letters on a yellow background, or with yellow coloring.
  6. Service equipment shall be field marked with the maximum available fault current and the date the fault current calculation was performed.
- I. Instruction Signs:
1. Operating Instructions: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
  2. Emergency Operating Instructions: Install instruction signs with white legend on a red background with minimum 3/8-inch- (10-mm-) high letters for emergency instructions at equipment used for power transfer or for load shedding.
  3. Panelboards and switchboards which are supplied by a feeder shall be marked to indicate the device or equipment where the power supply originates.
  4. Where the disconnecting means for a transformer is located in a remote location, the location shall be field marked on the transformer.
- J. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
    - a. Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where 2 lines of text are required, use labels 2 inches (50 mm) high.
    - b. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
  2. Equipment to Be Labeled:
    - a. Panelboards, electrical cabinets, and enclosures.
    - b. Access doors and panels for concealed electrical items.
    - c. Electrical substations.
    - d. Emergency system boxes and enclosures.
    - e. Disconnect switches.

- f. Enclosed circuit breakers.
- g. Motor starters.
- h. Push-button stations.
- i. Power transfer equipment.
- j. Battery inverter units.
- k. Fire-alarm control panel and annunciators.
- l. Monitoring and control equipment.

### 3.2 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Attach signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.
- E. System Identification Color Banding for Raceways and Cables: Each color band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.
- F. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
  - 1. Color shall be factory applied the entire length of conductors, except the following field-applied color-coding methods may be used instead of factory-coded wire for sizes larger than No. 10 AWG:
    - a. Colored, pressure-sensitive plastic tape in half-lapped turns for a distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Use 1-inch- (25-mm-) wide tape in colors specified. Locate tape bands to avoid obscuring cable identification markings.
    - b. Colored cable ties applied in groups of three ties of specified color to each wire at each terminal or splice point starting 3 inches (76 mm) from the terminal and spaced 3 inches (76 mm) apart. Apply with a special tool or pliers, tighten to a snug fit, and cut off excess length. Locate bands to avoid obscuring cable identification markings.
  - 2. Colors for 208/120-V Circuits:
    - a. Phase A: Black.
    - b. Phase B: Red.
    - c. Phase C: Blue.

3. Colors for 480/277-V Circuits:
  - a. Phase A: Brown.
  - b. Phase B: Orange.
  - c. Phase C: Yellow.
  
- G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.
  
- H. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.
  
- I. Painted Identification: Install painted identification according to manufacturer's written instructions and as follows:
  1. Clean surfaces of dust, loose material, and oily films before painting.
  2. Prime surfaces using type of primer specified for surface.

OF SECT 26 05 53

## SECTION 26 05 73 - OVERCURRENT PROTECTIVE DEVICE COORDINATION

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes computer-based, fault-current and overcurrent protective device coordination studies, and the setting of these devices. Protective devices shall be set based on results of the protective device coordination study.
  - 1. Coordination of series-rated devices is permitted except where fully rated systems are required.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 SUBMITTALS

- A. Product Data: For computer software program to be used for studies.
- B. Product Certificates: For coordination-study and fault-current-study computer software programs, certifying compliance with IEEE 399.
- C. Other Action Submittals:
  - 1. Coordination-study input data, including completed computer program input data sheets.
  - 2. Coordination-study report.
  - 3. Equipment evaluation report.
  - 4. Setting report.
  - 5. Flash hazard analysis.

#### 1.4 QUALITY ASSURANCE

- A. Studies shall use computer programs that are distributed nationally and are in wide use. Software algorithms shall comply with requirements of standards and guides specified in this Section. Manual calculations are not acceptable.
- B. Comply with IEEE 399 for general study procedures.
- C. Comply with IEEE 242 for short-circuit currents and coordination time intervals.
- D. Comply with NFPA 70 as amended by state and local codes.
- E. Comply with NFPA 70E for flash hazard analysis.

#### PART 2 - PRODUCTS

##### 2.1 COMPUTER SOFTWARE DEVELOPERS

- A. Available Computer Software Developers: Subject to compliance with requirements, companies offering computer software programs that may be used in the Work include, but are not limited to, the following:
  - 1. CYME International, Inc.
  - 2. EDSA Micro Corporation.
  - 3. Electrical Systems Analysis, Inc.
  - 4. SKM Systems Analysis, Inc.

##### 2.2 COMPUTER SOFTWARE PROGRAM REQUIREMENTS

- A. Comply with IEEE 399.
- B. Analytical features of fault-current-study computer software program shall include "mandatory," "very desirable," and "desirable" features as listed in IEEE 399, Table 7-4.
- C. Computer software program shall be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program shall report device settings and ratings of all overcurrent protective devices.

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Examine Project overcurrent protective device submittals for compliance with electrical distribution system coordination requirements and other conditions affecting performance.



- B. Proceed with coordination study only after relevant equipment submittals have been assembled. Overcurrent protective devices not submitted for approval with coordination study may not be used in study.

### 3.2 FAULT-CURRENT STUDY

- A. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project and use approved computer software program to calculate values.
- B. Calculate momentary and interrupting duties on the basis of maximum available fault current.
- C. Calculations to verify interrupting ratings of overcurrent protective devices shall comply with the following:
  - 1. Low-Voltage Circuit Breakers: IEEE 1015 and IEEE C37.50.
  - 2. Low-Voltage Fuses: IEEE C37.46.
  - 3. Circuit Breakers: IEEE C37.13.
- D. Study Report: Enter calculated X/R ratios and interrupting (5-cycle) fault currents on electrical distribution system diagram of the report. List other output values from computer analysis, including momentary (1/2-cycle), interrupting (5-cycle), and 30-cycle fault-current values for 3-phase, 2-phase, and phase-to-ground faults.
- E. Equipment Evaluation Report: Prepare a report on the adequacy of overcurrent protective devices by comparing fault-current ratings of these devices with calculated fault-current momentary and interrupting duties. Adjust device settings as required.
- F. Flash Hazard Analysis: Determine the Flash Protection Boundary and the personal protective equipment that people within the Flash Protection Boundary shall use. Provide information required to properly label each piece of equipment to conform to the requirements of the applicable codes and standards.

### 3.3 COORDINATION STUDY

- A. Gather and tabulate the following input data to support coordination study:
  - 1. Product Data for overcurrent protective devices specified in other Division 26 Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
  - 2. Impedance of utility service entrance.
  - 3. Electrical distribution system diagram showing the following:

- a. Load current that is the basis for sizing continuous ratings of circuits for cables and equipment.
  - b. Circuit-breaker and fuse-current ratings and types.
  - c. Relays and associated power and current transformer ratings and ratios.
  - d. Transformer kilovolt amperes, primary and secondary voltages, connection type, impedance, and X/R ratios.
  - e. Generator kilovolt amperes, size, voltage, and source impedance.
  - f. Cables. Indicate conduit material, sizes of conductors, conductor material, conductor insulation, and length.
  - g. Busway ampacity and impedance.
  - h. Motor horsepower and code letter designation according to NEMA MG 1.
4. Data sheets to supplement electrical distribution system diagram, cross-referenced with tag numbers on diagram:
- a. Special load considerations, including starting inrush currents and frequent starting and stopping.
  - b. Magnetic inrush current overload capabilities of transformers.
  - c. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
  - d. Ratings, types, and settings of utility company's overcurrent protective devices.
  - e. Special overcurrent protective device settings or types stipulated by utility company.
  - f. Time-current-characteristic curves of devices indicated to be coordinated.
  - g. Manufacturer, frame size, interrupting rating in amperes RMS symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
  - h. Manufacturer and type, ampere-tap adjustment range, time-delay adjustment range, instantaneous attachment adjustment range, and current transformer ratio for overcurrent relays.
  - i. Panelboards, switchboards, motor-control center ampacity, and interrupting rating in amperes RMS symmetrical.
- B. Perform coordination study and prepare a written report using the results of fault-current study and approved computer software program. Comply with IEEE 399.
- C. Comply with NFPA 70, as amended by state and local codes for coordination of devices, and for overcurrent protection of circuit elements and devices.
- D. Comply with IEEE recommendations for fault currents and time intervals.
- E. Conductor Protection: Protect cables against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and conductor melting curves in IEEE 242. Verify adequacy of phase conductors at maximum three-phase bolted fault currents, equipment grounding conductors, and grounding electrode conductors at maximum ground-fault currents.

F. Coordination-Study Report: Prepare a written report indicating the following results of coordination study:

1. Tabular Format of Settings Selected for Overcurrent Protective Devices:
  - a. Device tag.
  - b. Relay-current transformer ratios; and tap, time-dial, and instantaneous-pickup values.
  - c. Circuit-breaker sensor rating; and long-time, short-time, and instantaneous settings.
  - d. Fuse-current rating and type.
  - e. Ground-fault relay-pickup and time-delay settings.
2. Coordination Curves: Prepared to determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between series devices, including power utility company's upstream devices. Show the following specific information:
  - a. Device tag.
  - b. Voltage and current ratio for curves.
  - c. Three-phase and single-phase damage points for each transformer.
  - d. No damage, melting, and clearing curves for fuses.
  - e. Cable damage curves.
  - f. Transformer inrush points.
  - g. Maximum fault-current cutoff point.
3. Completed data sheets for setting of overcurrent protective devices.

### 3.4 OVERCURRENT PROTECTIVE DEVICE SETTING

- A. Manufacturer's Field Service: Engage a factory-authorized service representative, of electrical distribution equipment being set and adjusted, to assist in setting of overcurrent protective devices within equipment.
- B. Testing: Perform the following device setting and prepare reports:
  1. After installing overcurrent protective devices and during energizing process of electrical distribution system, perform the following:
    - a. Verify that overcurrent protective devices meet parameters used in studies.
    - b. Adjust devices to values listed in study results.
  2. Adjust devices according to recommendations in Chapter 7, "Inspection and Test Procedures," and Tables 10.7 and 10.8 in NETA ATS.

END OF SECTION 26 05 73

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## SECTION 26 08 00 - ELECTRICAL TESTING

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes general requirements for electrical field testing and inspecting. Detailed requirements are specified in each Section containing components that require testing. General requirements include the following:
  - 1. Coordination requirements for testing and inspecting
  - 2. Reporting requirements for testing and inspecting.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 QUALITY ASSURANCE

- A. As specified in each Section containing electrical testing requirements.

### PART 2 - PRODUCTS

NOT USED

### PART 3 - EXECUTION

#### 3.1 GENERAL TESTS AND INSPECTIONS

- A. Where no specific requirements are given, provide testing in accordance with the latest version of the InterNational Testing Association (NETA) Acceptance Testing Specification for Electric Power Distribution Equipment and Systems.
- B. Where tests are specified to be performed by an independent testing agency, prepare systems, equipment, and components for tests and inspections, and perform preliminary tests to ensure that systems, equipment, and components are ready for independent agency testing. Include the following minimum preparations as appropriate:

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1. Perform insulation-resistance tests.
  2. Perform continuity tests.
  3. Perform rotation test (for motors to be tested).
  4. Provide a stable source of single-phase, 208/120-V electrical power for test instrumentation at each test location.
- C. Test and Inspection Reports: In addition to requirements specified elsewhere, report the following:
1. Manufacturer's written testing and inspecting instructions.
  2. Calibration and adjustment settings of adjustable and interchangeable devices involved in tests.
  3. Tabulation of expected measurement results made before measurements.
  4. Tabulation of "as-found" and "as-left" measurement and observation results.

END OF SECTION 26 08 00

## SECTION 26 09 23 - LIGHTING CONTROL DEVICES

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes the following lighting control devices:
  - 1. Time switches.
  - 2. Occupancy sensors.
- C. Related Sections include the following:
  - 1. Division 26 Section "Wiring Devices" for wall-box dimmers and manual light switches.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

#### 1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

#### 1.5 COORDINATION

- A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Lighting control devices have been specified on the drawings and in other Division 26 Sections. Where they introduce lists, the following requirements apply to product selection:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

### 2.2 GENERAL LIGHTING CONTROL DEVICE REQUIREMENTS

- A. Line-Voltage Surge Protection: An integral part of the devices for 120- and 277-V solid-state equipment. For devices without integral line-voltage surge protection, field-mounting surge protection shall comply with IEEE C62.41 and with UL 1449.

### 2.3 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG, complying with Division 26 Section "Conductors and Cables."
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded copper conductors not smaller than No. 18 AWG, complying with Division 26 Section "Conductors and Cables."
- C. Class 1 Control Cable: Multiconductor cable with stranded copper conductors not smaller than No. 14 AWG, complying with Division 26 Section "Conductors and Cables."

## PART 3 - EXECUTION

### 3.1 SENSOR INSTALLATION

- A. Install and aim sensors in locations to achieve at least 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

### 3.2 WIRING INSTALLATION

- A. Wiring Method: Comply with Division 26 Section "Conductors and Cables." Minimum conduit size shall be 3/4 inch trade size
- B. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- C. Install field-mounting transient voltage suppressors for lighting control devices in Category A locations that do not have integral line-voltage surge protection.
- D. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.



- E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.
- F. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

### 3.3 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 26 Section "Electrical Identification."
- B. Label time switches and contactors with a unique designation.

### 3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
  - 1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
  - 2. Operational Test: Verify actuation of each sensor and adjust time delays.
- B. Remove and replace lighting control devices where test results indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.5 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose.

END OF SECTION 26 09 23

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**SECTION 26 20 01 - FEEDERS AND BRANCH CIRCUITRY**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes basic requirements for the installation of light and power feeders and circuitry run at less than 600 volts.
- C. Related Sections: The following sections contain requirements that relate to this Section:
  - 1. Division 26, Section "Raceways and Boxes."
  - 2. Division 26, Section "Conductors and Cables."
  - 3. Division 26, Section "Panelboards."

**1.2 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 48 "Seismic Controls for Electrical Work."
  - 2. Section 26 05 00 "Common Work Results for Electrical Work".
  - 3. This section is a part of each Division 26 section.

**1.3 SUBMITTALS**

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Circuited up "as-built" drawings and panel directories as called for in the Division 26 related sections.

**1.4 QUALITY ASSURANCE**

- A. Comply with NFPA 70, as amended by state and local codes.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. Products shall be as specified in the Division 26 related sections.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION OF FEEDERS**

- A. Feeder connections shall be in the phase rotation which establishes proper operation for all equipment supplied.
- B. Feeders consisting of multiple cables and raceways shall be arranged such that each raceway of the feeder contains one cable for each phase leg (and one neutral cable if any).
- C. Each individual tap off a feeder which consists of multiple cables per phase (and neutral if any) shall be arranged so that all of the cables of a phase leg (and neutral if any) of the feeder are connected to the corresponding phase leg (and neutral if any) of the individual tap.
- D. Indications of conductor sizing for three phase and three phase/four wire feeders shall, unless otherwise noted on the drawings, be understood as follows:
  - 1. Three (3) equally sized conductors represents a three phase feeder.
  - 2. Four (4) equally sized conductors represents a three phase/four wire feeder with 100% neutral.
  - 3. Three (3) equally sized conductors plus one (1) smaller conductor represents a three phase/three wire feeder plus ground wire.
  - 4. Four (4) equally sized conductors plus one (1) smaller conductor represents a three phase/four wire feeder plus ground wire).

### **3.2 INSTALLATION OF LIGHTING AND APPLIANCE BRANCH CIRCUITRY**

- A. Circuitry indicated without sizing shall be understood to be lighting and appliance branch circuitry protected at 20 amps or less.
- B. Conform all lighting and appliance branch circuitry (regardless of whether protected above or below 20 amps) to the following:-
  - 1. Except as noted below, circuitry shall be multi-wire utilizing common neutrals arranged so that no neutral conductor acts as a common wire for more than one circuit conductor connected to the same phase leg of the supply system.

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- a. Common neutrals shall not be utilized for circuitry runs emanating from panel branches having ground fault interrupting features or arc fault interrupting features regardless of any indication to the contrary on the floor plans.
  - b. Common neutrals shall not be utilized for circuitry runs containing more than (6) 120 volt receptacle circuits within a single raceway conduit.
2. Two and three pole branches in panels shall be used respectively for individual single phase load items connected line to line and individual three phase load items.
  3. Multi-wire branch circuits shall be supplied by multi-pole circuit breakers.
  4. Where circuitry indications require the use of 2-pole and/or 3-pole branch breakers which have not been scheduled, provide in the panelboards the required multi-pole breakers in lieu of the equivalent number of single pole branch breakers. Required quantities of single, two and three pole branch breakers shall be confirmed prior to ordering panels.
  5. Branch circuitry supplying relay controlled lighting fixtures shall be understood to include all necessary interconnections between the control panels containing the relays and the associated lighting or appliance panels.
  6. Under no condition shall any local switch break a neutral conductor.
  7. At any location where lighting and appliance branch circuitry is extended from a flush mounted panelboard to a suspended ceiling immediately above, at least four 1-inch empty conduits shall be included (in addition to those required for active circuitry) to permit future wiring escape from the panelboard. The empty conduits shall extend up from the panel and shall terminate in a threaded conduit cap immediately after turning out into the hung ceiling space.
  8. Raceway sizes shall conform to standard maximum permissible occupancy requirements except where these are exceeded by other requirements specified elsewhere.
- C. Conform lighting and appliance branch circuitry, indicated as being protected at 20 amps or less, to the following:-
1. 120 volt circuitry shall be supplied from 20 amp panel branches except as indicated, and as noted below:
  2. 277 (265) volt circuitry shall be supplied from 20 amp panel branches
  3. Except as specified below, minimum conductor size shall be #12 AWG.
  4. Common neutrals shall not be utilized for circuitry runs containing more than (6) 120 volt receptacle circuits within a single raceway conduit,

5. Conductors for 120 volt circuitry extending in excess of 75 feet, from the point of supply, to the first outlet shall be #10 AWG (minimum) copper to the first outlet. Increase beyond #10 AWG if required for compliance with code-mandated voltage drop restrictions.
6. Conductors for 277 (265) volt circuitry extending in excess of 150 feet, from the point of supply, to the first outlet shall be #10 AWG (minimum) copper to the first outlet. Increase beyond #10 AWG if required for compliance with code-mandated voltage drop restrictions.
7. Conductors used in runs consisting of more than six wires (exclusive of grounding conductors) in a single raceway shall be #10 AWG copper minimum. Increase beyond #10 AWG as required to comply with code-mandated derating factors, and as specified hereinbefore.
8. Circuits supplying receptacles which are not of the ground fault circuit interrupting type, and are located as noted below, shall be connected to panel branches that are equipped with ground fault interrupting features:
  - a. Receptacles located in bathrooms. Bathrooms shall be defined as spaces containing a basin plus a toilet, tub or shower.
  - b. All receptacles mounted on building exterior surfaces

D. Where circuitry has not been delineated for lighting fixtures, receptacles, switches and miscellaneous items intended for protection at 20 amps, such items shall be provided with circuitry conforming to the requirements listed below. Prior to installation of circuitry, submit for review floor plans showing circuit numbers, home runs, and interconnecting circuitry for all such items.

1. When circuiting up recessed ceiling lighting fixtures, connect fixtures on the basis of more than one fixture to a single outlet box, in an approved manner, as required to insure that circuits will not be unnecessarily lightly loaded due to mandated, restrictions on the maximum number of outlets per circuit. Except with special permission, unnecessarily light loading shall be understood to mean, less than 1000 volt amps (VA) on a 120 volt circuit and less than 3200 VA on a 277 volt circuit.
2. The total load on a circuit shall be computed by ascribing volt-amps to individual items on the basis of the following:-

ITEM	VOLT-AMPS (VA)
Any lighting fixture.	Input volt-amps as per lighting fixture schedule.
Any outlet with no specific wattage or circuiting instruction indicated.	180 volt amperes

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ITEM	VOLT-AMPS (VA)
Any outlet (other than for resistance heating) with wattage indicated.	1.15 x Indicated wattage
Any resistance heating outlet with wattage indicated.	1.0 x Indicated wattage
Any fractional HP motor with HP indicated.	2500 x Indicated HP
Any outlet with amps indicated.	120 x Indicated amps

3. Not more than 1450 VA to any 20 amp, 120 volt branch circuit. Not more than 4000 VA shall be applied to any 277 (265) panel branch circuit.
4. A separate 20 amp panel branch circuit supplying no other outlets shall be used for each outlet indicated as an "individual appliance circuit" "heavy duty" outlet.
5. Lighting fixture shall be connected to 20 amp panel branch circuits. Solidly connected equipment less than 1300 VA shall be connected to 15 amp panel branch circuits except as indicated or noted herein.
6. Lighting fixtures and receptacles shall not be connected to the same branch circuit.
7. Any installed lighting and appliance branch circuitry, found (as a result of unnecessarily light loading of conductors) to make excessive use of panel branches, shall be rearranged.
8. Circuits shall be balanced on phases at their supply point as evenly as possible.
9. The final arrangement of lighting and appliance branch circuitry shall be fully delineated on the record, or "as-built" drawings called for elsewhere.

END OF SECTION 26 20 01

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## SECTION 26 24 16 - PANELBOARDS

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes the following:
  - 1. Lighting and appliance branch circuit panelboards.
  - 2. Power and distribution panelboards.
- C. Related Sections include the following:
  - 1. Division 26 "Selection of Overcurrent Devices" for overcurrent protection program.
  - 2. Division 26 Section "Fuses".

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 2. Section 26 05 00 "Common Work Results for Electrical Work".
  - 3. This section is a part of each Division 26 section.

#### 1.3 DEFINITIONS

- A. Overcurrent Protective Device (OCD) (OCPD): A device operative on excessive current that causes and maintains the interruption of power in the circuit it protects.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of panelboard, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

- B. Shop Drawings: For each panelboard and related equipment.
  - 1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:
    - a. Enclosure types and details for types other than NEMA 250, Type 1.
    - b. Bus configuration, current, and voltage ratings.
    - c. Short-circuit current rating of panelboards and overcurrent protective devices.
    - d. UL listing for series rating of installed devices where applicable.
    - e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
- C. Manufacturer Seismic Qualification Certification: Submit certification that all equipment and components provided under this section will withstand seismic forces defined in Division 26 Section "Seismic Controls for Electrical Work." Include the following:
  - 1. Basis of Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
- D. Field Test Reports: Submit written test reports and include the following:
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.
  - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- E. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing.
- F. Operation and Maintenance Data: For panelboards and components to include in maintenance manuals. In addition "Operation and Maintenance Data," include the following:
  - 1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
  - 2. Time-current curves, including selectable ranges for each type of overcurrent protective device.

#### 1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain panelboards, OCD's, components and accessories through one source from a single manufacturer.

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- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by Underwriters Laboratories Inc.
- C. Comply with NEMA PB 1.
- D. Comply with NFPA 70 as amended by state and local codes.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:
  - 1. Ambient Temperature: Not exceeding 104 degrees F (40 degrees C).
  - 2. Altitude: Not exceeding 6600 feet (2000 m).
- B. Service Condition: NEMA PB 1, usual service conditions, as follows:
  - 1. Ambient temperature within limits specified.
  - 2. Altitude not exceeding 6600 feet (2000 m).
- C. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by City of New York or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
  - 1. Notify Commissioner no fewer than 5 days in advance of proposed interruption of electrical service.
  - 2. Do not proceed with interruption of electrical service without Architect's written permission.

1.7 COORDINATION

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Panelboards and Accessories:
    - a. Eaton Corp.; Cutler-Hammer Products.

- b. General Electric Co.; Electrical Distribution & Control Div.
- c. Siemens Energy & Automation, Inc.
- d. Schneider Electric; Square D

## 2.2 MANUFACTURED UNITS

- A. Fabricate and test panels according to IEEE 344 to withstand forces defined in Division 26 Section "Seismic Control for Electrical Work."
- B. Factory tests: Dielectric test, phase to phase and phase to ground, at twice the rated voltage plus 1,000 volts (1,500 volts minimum) for one minute. Date of test and the name and title of the individual certifying the test shall be indicated on a label affixed to the equipment.
- C. Enclosures: Flush- and surface mounted cabinets. NEMA PB 1, Type 1, to meet environmental conditions at installed location.
- D. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
- E. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.
- F. Directory Card: With transparent protective cover, mounted inside metal frame, inside panelboard door.
- G. Bus: Hard-drawn copper, 98 percent conductivity.
- H. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.
- I. Main and Neutral Lugs: Type suitable for use with conductor material.
- J. Main Devices: Main circuit breakers shall be bus-connected to main bus bar and shall not utilize any branch circuit space
- K. Feed-through Lugs: Type suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
- L. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.
- M. Where wires or cables are used within panelboards to make up internal connections (factory installed or otherwise) such wire or cable shall have copper conductors only.
- N. Where indicated or as required to assure ready accessibility of top switching and overcurrent device, they shall be arranged as multiple adjacent sections. A single overall cabinet shall be supplied for the multiple adjacent sections which constitute one panel. 1/4 inch (7 mm) minimum thickness plastic barriers having adequate angle iron framing support all around shall be included between sections.

The entire assembly shall be such as to include wiring gutter space for each section as if it were an individual panelboard. Common bussing shall be arranged for adjacent sections unless there is indication that the individual sections are to be separately supplied. Sub-feed lugs with full capacity cable taps to adjacent panel sections will be accepted as the bussing method.

### 2.3 POWER OR DISTRIBUTION PANELBOARDS

- A. Doors: Secured with vault-type latch with tumbler lock; keyed alike. Omit for fused-switch panelboards.
- B. Main Overcurrent Protective Devices and Branch Overcurrent Protective Devices: as specified in Division 26, Section "Selection of Overcurrent Devices."
- C. Cabinet: width and a depth adequate for a three pole branch device equal in rating to the panel mains. In no case shall the cabinet be wider than 42 inches (106 cm) or deeper than 18 inches (46 cm).

### 2.4 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- B. Doors: Concealed hinges, secured with flush latch with tumbler lock.
- C. Gutter space: adequate space for connecting to all active and spare branches.
- D. Cabinet width: not to exceed 24 inches (61 cm).
- E. Cabinet depth: not to exceed 6 inches (15 cm).

### 2.5 PANELBOARD BUSES

- A. A ground bus shall be provided for each panel.

### 2.6 OVERCURRENT PROTECTIVE DEVICES

- A. As described in Division 26 Section "Selection of Overcurrent Devices".

### 2.7 ACCESSORY COMPONENTS AND FEATURES

- A. Accessory Set: Include tools and miscellaneous items as required for overcurrent protective device test, inspection, maintenance, and operation.
- B. Provide "lock-on" clips for the toggle handles of 5 percent of the branches in all lighting and appliance panels. Apply these clips to circuits supplying night lights and others as directed in the field.

- C. Furnish handle padlock attachments for 5 percent of the branches in lighting and appliance panels, and padlocks (with key) for 10 percent of these padlock attachments, but not less than 10 locks. Apply the padlock attachments to circuits (as directed in the field) for which the branch circuit device must be lockable in the "off" position in order to provide code-approved disconnect means.

## 2.8 PANELBOARD SHORT CIRCUIT RATINGS

- A. Panelboards shall bear U.L. labels attesting to the adequacy of the equipment to withstand and interrupt short-circuit currents not less than those available at their incoming terminals. Panels shall either be fully rated or shall be series rated in conjunction with integral or remote upstream devices in compliance with Division 26 Section "Selection of Overcurrent Devices". U.L. labels shall include size and type of allowable upstream and branch circuit devices and series connected ratings.
- B. Panelboard short circuit ratings shall comply with the following:
  - 1. Panels and switches shall be "fully rated" for not less than 200,000 amps.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install panelboards and accessories according to NEMA PB 1.1.
- B. Comply with mounting and anchoring requirements specified in Division 26 Section "Seismic Controls for Electrical Work."
- C. Mount top of trim 74 inches (188 cm) above finished floor, unless otherwise indicated.
- D. Mount plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish.
- E. Install overcurrent protective devices and controllers.
  - 1. Set field-adjustable switches and circuit-breaker trip ranges.
- F. Install filler plates in unused spaces.
- G. Stub four 1-inch (DN 25) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (DN 25) empty conduits below slab not on grade.
- H. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

### 3.2 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 26 Section "Electrical Identification."

- B. Create a directory to indicate installed circuit loads. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.

### 3.3 CONNECTIONS

- A. Ground equipment according to Division 26 Section "Grounding and Bonding."
- B. Connect wiring according to Division 26 Section "Conductors and Cables."

### 3.4 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
  - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
  - 2. Test continuity of each circuit.
- B. Perform the following field tests and inspections and prepare test reports:
  - 1. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
  - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.
  - 1. Measure as directed during period of normal system loading.
  - 2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
  - 3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
  - 4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.
- D. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scanning of each panelboard. Remove panel fronts so joints and connections are accessible to portable scanner.

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1. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
2. Record of Infrared Scanning: Prepare a certified report that identifies panelboards checked and describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 CLEANING

- A. In completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

END OF SECTION 26 24 16



## SECTION 26 27 26 - WIRING DEVICES

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes the following:
  - 1. Single and duplex receptacles, ground-fault circuit interrupters,
  - 2. Single- and double-pole snap switches
  - 3. Device wall plates.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 2. Section 26 05 00 "Common Work Results for Electrical Work".
  - 3. This section is a part of each Division 26 section.

#### 1.3 DEFINITIONS

- A. GFCI: Ground-fault circuit interrupter.
- B. EMI: Electromagnetic interference.
- C. RFI: Radio-frequency interference.
- D. SPD: Surge suppression device.
- E. UTP: Unshielded twisted pair.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

## 1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device through one source from a single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70, as amended by state and local codes.
- D. SPD shall be UL listed; UL 1449 Third Edition.

## 1.6 COORDINATION

- A. Receptacles for Commissioner-Furnished Equipment: Match plug configurations.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Wiring Devices:
    - a. Bryant Electric, Inc./Hubbell Subsidiary.
    - b. Hubbell Incorporated; Wiring Device-Kellems.
    - c. Leviton Mfg. Company Inc.
    - d. Pass & Seymour/Legrand; Wiring Devices Div.
  - 2. Wiring Devices for Hazardous (Classified) Locations:
    - a. Crouse-Hinds/Cooper Industries, Inc.; Arrow Hart Wiring Devices.
    - b. EGS/Appleton Electric Company.
    - c. Killark Electric Manufacturing Co./Hubbell Incorporated.

### 2.2 RECEPTACLES

- A. Receptacles: NEMA WD 6, Comply with NEMA WD 1, Federal Specification WC 596, and UL 498.
- B. Straight-Blade and Locking Receptacles: Commercial specification grade, configuration 5-20R.
- C. Straight-Blade Receptacles: Hospital grade in patient care area. Tamper resistant hospital grade in rooms, bathrooms, playrooms, activity rooms, and patient care rooms of pediatric wards.

- D. GFCI Receptacles: Straight blade type, Commercial specification grade, with integral NEMA WD 6, Configuration 5-20R duplex receptacle; complying with UL 498 and UL 943. Design units for installation in a 2-3/4-inch- (70-mm-) deep outlet box without an adapter. Incorporate "through feed" features permitting the optional protection of downstream receptacles if desired.

## 2.3 SWITCHES

- A. Single- and Double-Pole Switches: Comply with NEMA WD 1 and WD 6, Federal Specification WS-896, and UL 20
  - 1. Snap Switches: Heavy-Duty grade, quiet type

## 2.4 WALL PLATES

- A. Single and combination types with openings to match corresponding wiring devices. Comply with NEMA WD 1 and WD 6.
  - 1. Plate-Securing Screws: Metal with head color to match plate finish.
  - 2. Material for Unfinished Spaces: Galvanized steel
  - 3. Material for Wet Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations." Enclosures for 120 Volt receptacles rated 20 Amperes or less shall be weatherproof whether or not the attachment plug cap is inserted.

## 2.8 FINISHES

- A. Color:
  - 1. Wiring Devices Connected to Normal Power System: As selected by Architect from manufacturer's standard colors, unless otherwise indicated or required by NFPA 70.
  - 2. Comply with NEMA WD 1.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install devices and assemblies level, plumb, and square with building lines.
- B. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and with grounding terminal of receptacles on top. Group adjacent devices under single, multigang wall plates.
- C. Remove wall plates and protect devices and assemblies during painting.

### 3.2 IDENTIFICATION

- A. Comply with Division 26 Section "Electrical Identification."

### 3.3 CONNECTIONS

- A. Ground equipment according to Division 26 Section "Grounding and Bonding."
- B. Connect wiring according to Division 26 Section "Conductors and Cables."
- C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

### 3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
  - 1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
  - 2. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.
- B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION 26 27 26

## SECTION 26 28 02 - SELECTION OF OVERCURRENT DEVICES

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes all overcurrent protective devices (OCPD's) (OCD's) required for the project. It defines the type of OCPD required for each individually mounted device, panelboard, switchboard and miscellaneous device required.
- C. Related Sections: The following Sections requirements relate to this Section:
  - 1. Division 26, Section "Fused Power Circuit Devices."
  - 2. Division 26, Section "Fuses."
  - 3. Division 26, Section "Panelboards."

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 48 "Seismic Controls for Electrical Work."
  - 2. Section 26 05 00 "Common Work Results for Electrical Work."
  - 3. This section is a part of each Division 26 section.

#### 1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specifications Section.
- B. Descriptive data defining how the required short circuit ratings will be met by the equipment furnished under the Related Sections described above. Include UL approval data from manufacturers for "series rated" combinations.

- C. In advance of, or in conjunction with, the submission of shop drawings for approval, provide data defining in detail how the required coordination and short circuit current ratings specified elsewhere in these specifications are achieved with the equipment being furnished under the listed Related Sections. The data shall, in narrative or graphic fashion, fully define how the various devices, individually, or in combination, comply with the "fully rated" or "series connected" short circuit current requirements. Include certifications from the manufacturer as to the UL approvals for these ratings for all proposed equipment. Short circuit and coordination study shall include recommended device settings. In particular, demonstrate selective coordination of overcurrent devices used for Emergency Systems and Legally Required Standby Systems.
- D. Arc flash study indicating arc flash hazard at each piece of distribution equipment.

#### 1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70, as amended by state and local codes.
- B. Listing and Labeling: Products - as described with the Related Sections above - shall be Underwriters Laboratories listed and labeled as defined in NFPA 70 Article 100. Where "series ratings" have been specified, listings attesting to these ratings shall be provided from UL or other nationally recognized testing laboratory.

### PART 2 - PRODUCTS

#### 2.1 GENERAL

- A. Refer to Related Sections listed hereinbefore for general product requirements.
- B. Short circuit current ratings, and the manufacturer's labels attesting to these ratings (based on UL listings), shall be required for overcurrent protection devices, where they are individually mounted (as fused switches, , and for the equipment assemblies when they are incorporated in panels, etc. Such ratings shall be in accordance with the following:-
  - 1. In order to insure that they are at least equal to the available fault current, minimum ratings have been specified herein for the individual overcurrent device types, and in the pertinent sections for panelboards, switchboards and other assemblies or devices. Where "series connected ratings" have been specified for circuit breaker type panelboards (see appropriate specification section), these minimum ratings are in general based on the use of upstream fuses which have been specifically tested with the circuit breakers, and have been UL listed accordingly.

2. Where such fuse-circuit breaker series ratings are not available from a particular manufacturer, a current limiting circuit breaker may be utilized as the upstream device in order to obtain the required series rating. Such current limiting breakers shall be incorporated as main devices in the panelboards, as part of upstream panelboards, metering assemblies, or as individually mounted devices as the case may be. Where the required ratings can be met with main or upstream non-current limiting breakers having appropriate interrupting capacities, as approved by UL, such arrangements may also be considered acceptable.

2.2 APPLICATION

- A. Overcurrent protective devices shall be provided in accordance with the schedule below. Abbreviations shall be understood to have the following meanings:

ABBREVIATION	DESCRIPTION
SW-BP	Bolted pressure switch
SW-QMQB	Quick-make, quick-break switch
/	Fusible (as part of switch abbreviation)
CB-SMC	Standard molded case circuit breaker.
CLCB-MC	Current limiting circuit breaker - molded case
PFU/CF	Fused pull fuse unit.

- B. Select overcurrent protection devices as follows:

CATEGORY OF APPLICATION	DEVICE TYPE
Service disconnect unit individually mounted or in switchboard	(0-800 amps) SW-QMQB/F
Main or branch unit in 277/480 volt distribution or power panel	SW-QMQB/F except CLCB-MC if needed for "series rating" for downstream lighting or appliance panel.

Main or branch unit in 120/208 volt panel	CB-SMC  SW-QMQB/CF, except CLCB-MC if needed for "series rating" for downstream lighting or appliance panel
Main unit in lighting or appliance panel	CB-SMC except CLCB-MC if needed for "series rating" of panel
Branch unit in lighting or appliance panel	CB-SMC
Individually mounted unit	QMQB/CF  SW-QMQB except CLCB-MC if needed for series rating of downstream lighting or appliance panel.

- C. Emergency Systems and Legally Required Standby Systems: Overcurrent devices shall be selected such that the distribution system for emergency systems and legally required standby systems is selectively coordinated. Series rated devices shall not be used for distribution for emergency systems and legally required standby systems, regardless of any indication to the contrary. Short circuit rating of panelboards and devices utilized in these systems shall be as required for a fully rated system.

### 2.3 QUICK-MAKE, QUICK-BREAK SWITCHES

- A. Select quick-make, quick-break type distribution switches in accordance with the following:-
1. They shall equal or exceed the performance required for NEMA type H.D. horsepower rated switches.
  2. They shall have arc quenchers and circuit breaker type pressure contacts.
  3. Where intended for panelboard mounting, they shall be of the "bolted-in" type.
  4. They shall be designed for use only with Class "J" fuses up to 600 amps, and "Class L" fuses above 600 amps, and incorporate factory installed clips designed to insure the use of proper fuses. Coordinate to insure that fuses supplied for the project match these fuse gaps.



5. Switches 400 amperes or larger shall be equipped with an Open-Fuse Trip Device arranged to trip switch open if a phase fuse opens.
6. They shall have defeatable, front access, coin proof interlocks. Interlocks shall prevent opening switch door when switch is ON and prevent turning switch ON when door is open. Switches shall include provisions for padlocking the switch in the open position.

#### 2.4 STANDARD MOLDED CASE CIRCUIT BREAKERS

##### A. Standard molded case circuit breakers shall comply with the following:-

1. They shall consist of manually operated quick-make, quick-break mechanically trip free operating mechanisms for simultaneous operation of all poles, with contacts, arc interrupters and trip elements for each pole, all enclosed in molded phenolic plastic cases.
2. Their tripping units shall be of the "thermal magnetic" type having bimetallic elements for time delay overload protection, and magnetic elements for short circuit protection.
3. Where no frame sizes are indicated their interrupting capacity (in RMS symmetrical amperes) shall be not less than 10,000 amperes for use in 120/208 volt lighting or appliance panels.
4. Where frame sizes are indicated their interrupting capacity (in RMS symmetrical amperes) shall not be less than 22,000 amperes for 100 amperes and 225 amperes frame circuit breakers, nor less than 42,000 amperes for larger frame sizes.
5. The minimum interrupting capacity in symmetrical RMS amperes of the circuit breakers intended for use in panelboards shall be as noted above. Where necessary in order to provide the UL approved "series connected" short circuit panel ratings specified elsewhere, (see "Panels for Light and Power" specification) breakers with higher interrupting capacities shall be provided as required.
6. They shall be of the "bolted-in" type.
7. Single pole breakers sized 20 amps or less shall be rated for switching duty.
8. Where utilized for circuits supplying HID lighting, they shall be HID rated.
9. They shall be multi-pole circuit breakers, or single-pole circuit breakers with handle ties where serving multi-wire branch circuits.
10. They shall be equipped with 5 milliamp sensitivity ground fault interrupting features where so indicated, and/or where they supply 120 volt, 15- and 20-ampere receptacles in bathrooms, kitchens, within 6 feet of sinks, and other such code mandated locations

11. They shall include provisions for padlocking the device in the open position where serving loads which require such protection.

## 2.5 FUSES

- A. Refer to Division 26, Section "Fuses" for additional requirements.
- B. Select fuses in accordance with the following:
  1. Regardless of the actual available fault current they shall, at full recovery voltage, be capable of safely interrupting fault currents of 200,000 amperes RMS symmetrical deliverable at the line side of the fuse.
  2. They shall be suitable for application to fuse gaps which reject other types of fusing. Coordinate with supplier(s) of all fusible switch units (in panels, switchboards, etc.) for the project to insure that fuse gaps match the specified fuse types.
  3. Except as noted hereinafter, in sizes up to 600 amps, they shall be of the Class "J" time delay type, capable of carrying 500 percent of rated current for not less than 10 seconds and UL listed as a "Class J" fuse. Fuses shall be Shawmutt Type "AJT", Bussmann Type "LPJ", or other approved. Approval is contingent on certified test data demonstrating full compliance with the following requirements:-
    - a. Fuse shall carry 500 percent of rating for at least 10 seconds.
    - b. Fuse shall be suitable for motor feeders when applied at 150 percent of motor full load current.
    - c. Fuse selectivity with downstream fuses shall be:-
      - (i) 2:1 with "J" time delay
      - (ii) 3:1 with "RK-5" time delay
      - (iii) 2:1 with "RK-1" time delay
  4. Where intended for use in motor starters (individual, or in motor control centers) they shall be of the dual element time delay type, UL listed as "Class RK-5", and capable of carrying 500 percent of rating for at least 10 seconds. Utilize "Class RK-1" time delay fuses where required to insure coordination with upstream fuses.
  5. Except as noted hereinafter, in sizes over 600 amps, they shall be of the current limiting type, UL listed as "Class L".

6. Fuses to be used in current limiting circuit breakers, regardless of actual available fault current, at full recovery voltage, shall be capable of safely interrupting fault currents in the order of 200,000 amperes RMS symmetrical of 280,000 amperes RMS asymmetrical. The current limiting fuses shall coordinate with and back up the circuit breakers they are associated with so that all fault overload currents occurring within the safe capability of the breakers shall cause the breakers to open, and all currents occurring beyond the safe capability of the breakers shall cause the fuses to open; the opening of fuses being such as to prevent damage to any circuit breaker component parts. Where directed, fuses shall be reduced in size so as to provide backup protection for downstream overcurrent devices.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Comply with the requirements of Division 26, Sections 26 28 13 and 26 24 16.
- B. Submit recommended settings for all adjustable or interchangeable overcurrent and ground fault tripping devices. Include a complete short circuit and coordination study to demonstrate that the recommended device settings will provide a completely coordinated system based on the available fault currents, except where "full" coordination is not possible due to the series rating of devices and/or where instantaneous trip devices are in series. Include all work required in the field to verify that factory settings are as recommended, and to field set device whose settings are not as recommended. Provide Arc-Flash Study.

END OF SECTION 26 28 02

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## SECTION 26 28 13 - FUSES

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes cartridge fuses, rated 600 V and less, for use in switches, and spare fuse cabinets.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 SUBMITTALS

- A. Product Data: Include dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings for each fuse type indicated.
- B. Product Data: Include the following for each fuse type indicated:
  - 1. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
  - 2. Let-through current curves for fuses with current-limiting characteristics.
  - 3. Time-current curves, coordination charts and tables, and related data.
- C. Maintenance Data: For fuses to include in emergency operation and maintenance manuals.
  - 1. "Operation and Maintenance Data", include the following:
    - a. Let-through current curves fuses with current-limiting characteristics.
    - b. Time-Current curve, coordination charts and tables, and related data.

#### 1.4 QUALITY ASSURANCE

- A. Source Limitations: Provide fuses from a single manufacturer.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NEMA FU 1.
- D. Comply with NYC Electrical Code.

#### 1.5 PROJECT CONDITIONS

- A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F (4.4 deg C) or more than 100 deg F (38 deg C), apply manufacturer's ambient temperature adjustment factors to fuse ratings.

#### 1.6 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged in original cartons or containers and identified with labels describing contents.
  - 1. Fuses: Quantity equal to 10 percent of each fuse type and size, but not fewer than 3 of each type and size.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Cooper Bussman, Inc.
  - 2. Eagle Electric Mfg. Co., Inc.; Cooper Industries, Inc.
  - 3. Ferraz Shawmut.

#### 2.2 CARTRIDGE FUSES

- A. Characteristics: NEMA FU 1, nonrenewable cartridge fuse; class and current rating indicated; voltage rating consistent with circuit voltage.

#### 2.3 SPARE FUSE CABINET

- A. Cabinet: Wall-mounted, 0.05-inch-1.27-mm- thick steel unit with full-length, recessed piano-hinged door and key-coded cam lock and pull.
  - 1. Size: Adequate for storage of spare fuses specified with 15 percent spare capacity minimum.
  - 2. Finish: Gray, baked enamel

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3. Identification: "SPARE FUSES" in 1-1/2-inch (40-mm) high letters on exterior of door.
4. Fuse Pullers: For each size fuse.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.
- B. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 FUSE APPLICATIONS

- A. Refer to Division 26, Section "Selection of Overcurrent Devices" for Determination of Fuse Types for Installation Throughout the Distribution System.

#### 3.3 INSTALLATION

- A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.
- B. Install spare fuse cabinets.

#### 3.4 IDENTIFICATION

- A. Install labels indicating fuse replacement information on inside door of each fused switch.

END OF SECTION 26 28 13

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## SECTION 26 28 16 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes individually mounted enclosed switches and circuit breakers used for the following:
  - 1. Feeder and branch-circuit protection.
  - 2. Motor and equipment disconnecting means.
- C. Related Sections include the following:
  - 1. Division 26 Section "Wiring Devices" for attachment plugs, receptacles, and toggle switches used for disconnecting means.
  - 2. Division 26 Section "Fuses" for fusible devices.
  - 3. Division 26 Section "Selection of Overcurrent Devices" for additional information.
  - 4. Division 26 Section "Enclosed Controllers (Installation of)"
  - 5. Division 26 Section "Variable Frequency Controllers (Installation of)"

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 48 "Seismic Controls for Electrical Work."
  - 2. Section 26 05 00 "Common Work Results for Electrical Work."
  - 3. This section is a part of each Division 26 section.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of switch, circuit breaker, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

- B. Shop Drawings: For each switch and circuit breaker include the following:
  - 1. Enclosure types and details for types other than NEMA 250, Type 1.
  - 2. Current and voltage ratings.
  - 3. Short-circuit current rating.
  - 4. UL listing for series rating of installed devices.
  - 5. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
- C. Manufacturer Seismic Qualification Certification: Submit certification that all equipment and components provided under this section will withstand seismic forces defined in Division 26 Section "Seismic Controls for Electrical Work." Include the following:
  - 1. Basis of Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
- D. Field Test Reports: Written reports specified in Part 3.
- E. Maintenance Data: Include the following:
  - 1. Routine maintenance requirements for components.
  - 2. Manufacturer's written instructions for testing and adjusting switches and circuit breakers.
  - 3. Time-current curves, including selectable ranges for each type of circuit breaker.

#### 1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by Underwriters Laboratories.
- B. Comply with NEMA AB 1 and NEMA KS 1.
- C. Comply with NFPA 70, as amended by state and local codes.

#### 1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:

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1. Ambient Temperature: Not less than minus 22 deg F (minus 30 deg C) and not exceeding 104 deg F (40 deg C)
2. Altitude: Not exceeding 6600 feet (2000 m).

## 1.6 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  1. Eaton Corp.; Cutler-Hammer Products
  2. General Electric Co.; Electrical Distribution & Control Division.
  3. Siemens Energy & Automation, Inc.
  4. Schneider Electric; Square D

### 2.2 ENCLOSED SWITCHES

- A. Enclosed, Nonfusible Switch: NEMA KS 1, Type HD, with lockable handle with provisions for two padlocks, and interlocked with cover in closed position.
  1. Where used as an in-sight disconnect interposed into the circuit between a Variable Frequency Controller (VFC) and a motor, or used as an in-sight disconnect for a hydraulic elevator, include an auxiliary contact to open the motor control circuit prior to opening of main contacts. Auxiliary contact shall close after the main contacts close.
  2. Where used as an in-sight disconnect where six conductors are required between the motor controller and the motor, switch shall be a six pole device regardless of indications on the drawings.
- B. Enclosed, Fusible Switch, 800 A and Smaller: NEMA KS 1, Type HD, with clips to accommodate specified fuses, lockable handle with provisions for two padlocks, and interlocked with cover in closed position.

### 2.3 ENCLOSED CIRCUIT BREAKERS

- A. Refer to Division 26 Section "Selection of Overcurrent Devices" for additional information.

### 2.4 ENCLOSURES

- A. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.
  - 1. Outdoor Locations: NEMA 250, Type 3R.
  - 2. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
  - 3. Hazardous Areas Indicated on Drawings: NEMA 250, Type 7C.

### 2.5 FACTORY FINISHES

- A. Finish: Manufacturer's standard paint applied to factory-assembled and -tested enclosures before shipping.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Comply with mounting and anchoring requirements specified in Division 26 Section "Seismic Controls for Electrical Work."
- B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

### 3.3 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 26 Section.
- B. Enclosure Nameplates: Label each enclosure with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.

### 3.4 CONNECTIONS

- A. Install equipment grounding connections for switches and circuit breakers with ground continuity to main electrical ground bus.

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- B. Install power wiring. Install wiring between switches and circuit breakers, and control and indication devices.
- C. Install control circuit lockout wiring between disconnect switches and VFC's.
- D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

### 3.5 FIELD QUALITY CONTROL

- A. Testing: After installing enclosed switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
  - 1. Procedures: Perform each visual and mechanical inspection and electrical test indicated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
  - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- B. Testing Reports: Prepare a written report to record the following:
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.
  - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

### 3.6 ADJUSTING

- A. Set field-adjustable switches and circuit-breaker trip ranges.

### 3.7 CLEANING

- A. On completion of installation, inspect interior and exterior of enclosures. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

END OF SECTION 26 28 16

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## SECTION 26 29 13 - ENCLOSED CONTROLLERS (INSTALLATION OF)

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes the installation of A.C. individually enclosed motor controllers rated 600 V and below. The motor controllers will be furnished as part of Division 23.
- C. Related Sections include the following:
  - 1. Division 26 Section "Common Work Results for Electrical" for general materials and installation methods.
  - 2. Division 26 Section "Selection of Overcurrent Devices" for OCD's and disconnect switches used with motor controllers.
  - 3. Division 23 Section "Enclosed Controllers".
  - 4. Division 26 Section "Variable Frequency Controllers, Installation of"

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 SUBMITTALS

- A. Field Test Reports: Written reports specified in Part 3.

#### 1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70, as amended by state and local codes.
- B. The terms "listed" and "labeled" are defined as they are in the National Electrical Code, Article 100.

## 1.5 COORDINATION

- A. Coordinate layout and installation of enclosed controllers with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate features of enclosed controllers and accessory devices with pilot devices and control circuits to which they connect.
- C. Coordinate features, accessories, and functions of each enclosed controller with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.

## PART 2 - PRODUCTS

NOT APPLICABLE.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. **General:** Install independently mounted motor control devices in accordance with manufacturer's written instructions.
- B. **Location:** Locate controllers as indicated and within sight of motors controlled. Where controller is not located within sight of the motor controlled (as defined in the National Electrical Code), provide a nonfusible disconnect switch to serve as the local motor disconnect.
- C. **Mounting:** For control equipment at walls, bolt units to wall or mount on light-weight structural steel channels bolted to the wall. For controllers not at walls, provide freestanding racks fabricated of structural steel members and light-weight slotted structural steel channels.
- D. **Motor-Controller Fuses:** Install fuses in each fusible switch. Conform to requirements of Division 26 Section "Overcurrent Protective Devices."
- E. **Modify as required the internal control of motors if necessary to accommodate connection of external control wiring in accordance with applicable wiring diagrams.**
- F. **Relay settings:** Modify factory settings of adjustable time delay relays in accordance with an approved schedule.

### 3.2 IDENTIFICATION

- A. **Identify motor control components and control wiring in accordance with Division 26 Section "Electrical Identification." Where not cover mounted on motor controller, device identification nameplate identify the associated motors.**



### 3.3 CONTROL WIRING

- A. Control wiring for HVAC motors will be provided as part of the Building Management System (central mechanical control system) work of Division 23, except for the following wiring which is provided as part of the electrical work (Division 26):
  - 1. For each motor supplied by a VFC, run 2 #14 from the disconnect switch at the motor to the VFC, and connect so as to de-energize "start circuit" when switch is open. Run with power circuitry or in separate raceway.
- B. Control wiring for plumbing/fire protection motors is provided as part of the electrical work. For each such motor, provide wiring and connect to all outlying control devices as directed. Refer to plumbing and fire protection drawings and specifications for quantities and locations.
- C. Damper Control Interface: Start command to open associated dampers before the motor is allowed to operate. Input to accept damper limit switch contact closure to allow the motor to operate in hand and auto or remote mode.
- D. Safety Control Interface: Input to accept safety device contact closure to stop motor operation in hand and auto or remote mode.
- E. Control wiring is accomplished utilizing #14 AWG copper conductor with THWN insulation run in conduit as specified for feeders in Division 26, Section "Raceways."
- F. Include any necessary field installed make-up wiring (within motor controller enclosures) as required to incorporate the contained devices and accessories into the control scheme.

### 3.4 MOTOR CONTROLLER FUSES

- A. Motor-Controller Fuses: Install indicated fuses in each fusible switch.

### 3.5 CONTROL WIRING INSTALLATION

- A. Install required control wiring according to Section 26 05 19.
- B. Bundle, train, and support wiring in enclosures.
- C. Connect hand-off-automatic switches and other automatic control devices and accessories within controllers as required to accommodate the control scheme.
  - 1. Connect selector switches to bypass only the manual and automatic control devices that have no safety functions when switch is in the hand position.
  - 2. Connect selector switches with motor-control circuit in both hand and automatic positions for safety-type control devices such as low- and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.

### 3.6 CONNECTIONS

- A. Tighten connectors, terminals, bus joints, and mountings. Tighten field-connected connectors and terminals, including screws and bolts, according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Ground equipment.

### 3.7 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
  - 1. Test insulation resistance for each enclosed controller bus, component, connecting supply, feeder, and control circuit.
  - 2. Test continuity of each circuit.
- B. Testing: After installing enclosed switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
  - 1. Procedures: Perform each electrical test and visual and mechanical inspection indicated in NETA ATS, Sections 7.5, 7.6, and 7.16. Certify compliance with test parameters.
  - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- C. Testing Reports: Prepare a written report to record the following:
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.
  - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

### 3.8 ADJUSTING

- A. Set field-adjustable switches and circuit-breaker trip ranges.

### 3.9 CLEANING

- A. Clean enclosed controllers internally, on completion of installation, according to manufacturer's written instructions. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION 26 29 13

## SECTION 26 29 23 - VARIABLE FREQUENCY CONTROLLERS (INSTALLATION OF)

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes installation of solid-state, PWM, VFCs for speed control of three-phase, squirrel-cage induction motors. VFC's will be furnished as part of Division 23.
- C. Related Sections include the following:
  - 1. Division 26 Section "Common Work Results for Electrical" for general materials and installation methods.
  - 2. Division 26 Section "Enclosed Controllers, (Installation of)" for control wiring.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 DEFINITIONS

- A. BMS: Building management system.
- B. VFC: Variable frequency controller.

#### 1.4 SUBMITTALS

- A. Field Test Reports: Written reports specified in Part 3.

#### 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Underwriters Laboratories listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70, as amended by state and local codes.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store VFCs indoors in clean, dry space with uniform temperature to prevent condensation. Protect VFCs from exposure to dirt, fumes, water, corrosive substances, and physical damage.

1.7 COORDINATION

- A. Coordinate layout and installation of VFCs with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate features of VFCs, installed units, and accessory devices with pilot devices and control circuits to which they connect.
- C. Coordinate features, accessories, and functions of each VFC and each installed unit with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.

1.8 EXTRA MATERIALS

- A. Spare Fuses: Furnish one spare for every five installed, but not less than one set of three of each type and rating.

PART 2 - PRODUCTS

NOT APPLICABLE.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, surfaces, and substrates to receive VFCs for compliance with requirements, installation tolerances, and other conditions affecting performance.
- B. Examine roughing-in for conduit systems to verify actual locations of conduit connections before VFC installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install VFCs in accordance with manufacturer's written instructions.
- B. See Division 26 Section "Common Work Results for Electrical" for additional general installation requirements.

- C. **Location:** Locate controllers as indicated and within site of motors controlled. Where controller is not located within sight of the motor controlled (as defined in the National Electrical Code), provide a nonfusible disconnect switch to serve as the local motor disconnect. Switch includes additional dry contact to lock out operation of VFC when disconnect is open.
- D. **Mounting:** For control equipment at walls, bolt units to wall or mount on light-weight structural steel channels bolted to the wall. For controllers not at walls, provide freestanding racks fabricated of structural steel members and light-weight slotted structural steel channels.
- E. Where VFC consists of more than a single cabinet, provide all required interwiring between cabinets.
- F. Comply with mounting and anchoring requirements specified in Division 26 Section "Seismic Controls for Electrical Work."
- G. **Controller Fuses:** Install fuses in each fusible switch. Comply with requirements in Division 26 Section "Fuses."
- H. Anchor each VFC assembly to steel-channel sills arranged and sized according to manufacturer's written instructions. Attach by bolting. Level and grout sills flush with mounting surface.

### 3.3 IDENTIFICATION

- A. Identify VFCs, components, and control wiring according to Division 26 Section "Electrical Identification."
- B. **Operating Instructions:** Frame printed operating instructions for VFCs, including control sequences and emergency procedures. Fabricate frame of finished metal, and cover instructions with clear acrylic plastic. Mount on front of VFC units.

### 3.4 CONTROL WIRING INSTALLATION

- A. Install wiring between VFCs and terminal cabinets according to Division 26 Section "Enclosed Controllers (Installation of)."
- B. Bundle, train, and support wiring in enclosures.
- C. Connect hand-off-automatic switch and other automatic-control devices where available.
  - 1. Connect selector switches to bypass only manual- and automatic-control devices that have no safety functions when switch is in hand position.
  - 2. Connect selector switches with control circuit in both hand and automatic positions for safety-type control devices such as low- and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.

- D. Install control wiring between VFCs and interlock contact in motor disconnect switch and connect to lock-out VFC until switch has been re-closed to permit restart.

### 3.5 CONNECTIONS

- A. Conduit installation requirements are specified in other Division 26 Sections. Drawings indicate general arrangement of conduit, fittings, and specialties.
- B. Ground equipment according to Division 26 "Grounding and Bonding."

### 3.6 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
  - 1. Test insulation resistance for each connecting supply, feeder, and control circuit.
  - 2. Test continuity of each circuit.
  - 3. Assist the Division 23 contractor with testing as required.
- B. Division 23 trade will engage a factory-authorized service representative to perform startup service.
- C. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements in Division 26 Sections.

### 3.7 ADJUSTING

- A. Set field-adjustable switches

### 3.8 CLEANING

- A. Clean VFCs internally, on completion of installation, according to manufacturer's written instructions. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION 26 29 23

## SECTION 26 51 00 - LIGHTING

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 26 Sections.
- B. This Section includes interior and exterior light fixtures, emergency lighting units, exit signs, lamps, ballasts and accessories.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.
  - 4. Division 26 Section "Supporting Devices".
  - 5. Division 26 Section "Lighting Control Devices".
  - 6. Division 26 Section "Wiring Devices".
  - 7. Division 26 Section "Seismic Controls for Electrical Work".

#### 1.3 SUBMITTALS

- A. For each type of light fixture, emergency lighting unit, or exit sign specified submit data on standard features and accessories, and the following:
  - 1. Outline drawings indicating fixture dimensions.
  - 2. Catalogue cuts for proposed lamps.
  - 3. Performance data for proposed fluorescent and high intensity discharge ballasts.
  - 4. Battery and charger data for emergency lighting units.
- B. For nonstandard fixtures, submit detailed shop drawings indicating dimensions, materials, weights, method of field installation and assembly, method of relamping and ballast access, and principal features.

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- C. Submit project-specific, factory-produced shop drawings for all fluorescent pendants and continuous fluorescent wall-slots. Drawings show housing lengths, joiners, supports, endcaps, corners, and unlighted end sections, as applicable, for all unique row lengths.
- D. Submit dimming ballast compatibility certificates signed by the lighting control system manufacturer certifying that proposed dimming ballasts are compatible with proposed dimming systems.
- E. Submit samples of fixtures as directed by Commissioner. Unless otherwise noted, all samples are provided with specified lamp(s) and ballast(s), and are equipped with a cord and plug for operation at 120V.
- F. If shop drawings are submitted for a specific fixture type by a non-specified manufacturer, and approvals cannot be obtained by the third submission, then the proposed equipment will not be accepted and the specified equipment is furnished.

#### 1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70 as amended by state and local codes.
- B. Electrical Components of fixtures are listed and labeled by UL where applicable.
- C. Provide fixtures and accessory components specified in this Section that are listed and labeled for their indicated use and installation conditions on Project.
  - 1. Fixtures specified for installation in damp or wet locations are listed and labeled for use in such locations.
  - 2. Fixtures specified for installation in insulated ceilings are IC-rated if insulation comes within 3 inches (76 mm) of sides of fixture housings, or within 6 inches (152 mm) of top of fixture housings.
  - 3. Fixtures specified for installation in hazardous locations conform to UL 844.
- D. The Terms "Listed" and "Labeled" are used here as per the definitions in the National Electrical Code, Article 100.

#### 1.5 COORDINATION

- A. For ceiling-mounted fixtures, coordinate fixtures, mounting hardware, and trim with ceiling system and other items, including work of other trades, which must be mounted on ceiling or in ceiling space.
- B. Lighting fixtures, ballasts, lamps and other components meet or exceed the requirements of all applicable federal, state, and/or municipal energy codes.



## PART 2 - PRODUCTS

### 2.1 LIGHT FIXTURES AND FIXTURE COMPONENTS, GENERAL

- A. Light fixtures and components are suitable for operation at the voltage of the building circuits to which they are connected.
- B. Light fixtures are furnished complete with all appurtenances necessary for their proper operation, installation, and support.
- C. Light fixtures conform to the following standards as applicable:
  - 1. Fluorescent Fixtures conform to UL 1570.
  - 2. Exit Signs conform to UL 924.
- D. General Construction:
  - 1. Light fixtures are constructed with joints made only by means of welded, brazed, screwed, or bolted construction methods. Soldered joints will not be permitted. No self-tapping screws, bled metal tapping methods, or rivets are employed for fastening any parts to or in any wireway or wiring chamber, for fastening any parts which must be removed to gain access to electrical components requiring service or replacing, or for fastening any electrical component or support for same.
  - 2. All ferrous parts and supports, other than parts manufactured of stainless steel, are completely rustproofed after fabrication, and before finish coatings are applied. Rustproofing is by means of galvanizing, bonderizing, zinc plating, or by treatment with other industry standard rust-preventing processes providing rustproofing qualities equal to the processes mentioned above.
  - 3. All screws, bolts, nuts and other fastening and latching hardware are cadmium or equivalent plated.
  - 4. All metallic cast or extruded parts are close grained, sound, and free from imperfections or discolorations. Cast or extruded parts are rigid, true to pattern, and of ample weight and thickness. Cast or extruded parts are properly fitted, filed, ground buffed, and chased to provide finished surfaces and joints free of imperfection with all details or ornamentation brought out. Finished thickness of all cast parts is not less than 1/8 inch (3 mm).
  - 5. Housings are constructed so that all electrical components are easily accessible and replaceable without removing housings from their mountings.
- E. Sheet metal components are fabricated of steel, except as indicated. Form and support sheet metal to prevent warping and sagging.

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- F. Doors, frames, and other means of internal access operate smoothly, free from light leakage under operating conditions, and are arranged to permit relamping without use of tools, unless indicated otherwise on drawings. Arrange doors, frames, lenses, diffusers, and other pieces to prevent accidental falling during relamping and when secured in operating position.
- G. Specular, semi-specular, and laminated silver metallized film reflectors have a non-iridescent coating when used with triphosphor fluorescent lamps. Reflectors have total hemispheric reflectances equal to or greater than the following values, unless otherwise noted:
1. White surfaces: 90 percent.
  2. Specular surfaces: 87 percent.
  3. Semi-specular surfaces: 84 percent.
  4. Laminated silver metallized films: 95 percent.
- H. Lenses and diffusers are 100 percent virgin acrylic, tempered annealed glass, or cast glass unless otherwise noted. When polycarbonate lenses are specified, they have a high resistance to yellowing or brittleness due to exposure to heat or ultraviolet radiation. Polystyrene lenses are not provided under any circumstances. Lens thickness is at least 1/8 inch (3mm), unless otherwise noted.
1. Fixture support components comply with Division 26, Section "Supporting Devices" and Division 26, Section "Seismic Controls for Electrical Work". Single-stem hangers are 1/2-inch (13mm) minimum diameter steel or aluminum tubing with swivel ball fitting and ceiling canopy arranged so that stems hang vertically regardless of the angle of the surface they are mounted from. Finish of stems and canopy plates are same as fixture unless otherwise noted.
  2. Hook hangers are only provided where specified. Hook hangers are integrated assemblies matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.
  3. Provide pendant mounting hardware for fixture types indicated as suitable for surface or pendant mounting in accordance with instructions issued during construction or as required by job conditions.
  4. Wherever a fixture or its hanger canopy is applied to a surface mounted outlet box, a finishing ring (escutcheon) is utilized to conceal the outlet box.
  5. Unless otherwise noted, linear fluorescent pendants are provided with aircraft cable supports, with power fed through a single straight white cord at one end of each row. When multiple independent feed points are required to satisfy circuitry requirements (e.g. when a continuous pendant row has both emergency and normal sections), locate feeds at two ends of row.

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- I. Lampholders are suitable for operation of the specified lamps and are set so that lamps are positioned in optically correct relation to all light fixture components. All lampholders comply with applicable requirements of ANSI C81. All fluorescent lampholders comply with UL 542.
- J. Fixtures for use in damp or wet locations are suitably gasketed to prevent the entrance of moisture.
- K. Fixtures utilizing ballasts or transformers bear identification, by means of a label on the reflector or body, of the circuit voltage at which they are intended to operate.
- L. Fixtures are complete with all internal wiring and all flexible conduits, pigtails, and the like necessary for external connections. All wire utilized for connections to or between individual lamp sockets and lamp auxiliaries (i.e., wires which do not constitute "through circuit" wiring) are minimum #16 gauge, industry standard, fixture wire suitable for the temperature, current and voltage conditions to which it is subjected. Internal wiring contains a minimum number of splices. Splices in internal wiring are made with approved insulated "wire nut" type mechanical connectors, suitable for the temperature and voltage conditions to which they are subjected.
- M. Grounding-type flexible conduit is used for light fixture pigtails, and grounding type connectors are used for installing same. Include grounding conductor if upstream overcurrent device exceeds 20 amps.
- N. Fluorescent fixtures specified with integral emergency battery packs (also known as emergency ballasts) incorporate a test switch and indicator light within the fixture. Test switch and indicator light are discretely located, so that they are not visible from ordinary viewing angles, but so that they are readily accessible to maintenance personnel, as required by code. Fixtures incorporating emergency battery packs are wired so that they may be switched or dimmed as part of their assigned lighting control zone without causing the battery pack to energize the lamps.

## 2.2 BALLASTS

- A. General Requirements: Provide ballasts as indicated in the Light Fixture Schedule. If specific ballasts are not identified in the Light Fixture Schedule, provide ballasts as indicated below:
  - 1. Fixtures with T-8 linear and U-bent fluorescent lamps are provided with instant start solid-state electronic ballasts.
  - 2. Fixtures with T-5 standard and high-output linear fluorescent lamps are provided with programmed rapid start solid-state electronic ballasts.
  - 3. Fixtures with T-5 "biax" 2G11-base lamps (excluding NEMA FT40W) are provided with programmed rapid start solid-state electronic ballasts.
  - 4. Fixtures with 40W T-5 "biax" 2G11-base lamps (NEMA FT40W) are provided with instant start solid-state electronic ballasts.

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5. Fixtures with T-4 "quad tube" and "triple tube" compact fluorescent lamps (NEMA CFQ and CFM) are provided with programmed rapid start solid-state electronic ballasts.
  6. Fixtures with T-4 "twin tube" compact fluorescent lamps rated 13W or lower (NEMA CFT13W, CFT9W, and CFT7W) are provided with preheat electromagnetic ballasts.
  7. Fixtures with HID lamps are provided with electromagnetic ballasts.
- B. Instant start electronic ballasts comply with the following:
1. Ballasts for T-8 lamps operate from a 50/60 Hz input source of 108-305 volts with no damage to the ballasts.
  2. Input current Total Harmonic Distortion (THD) does not exceed 10 percent.
  3. Power factor is 0.90 or greater.
  4. Provide 2-, 3-, or 4-lamp ballasts for multilamp fixtures wherever possible. All multilamp ballasts operate lamps in parallel, so that the loss of one or more lamps will not prevent the remaining lamps from functioning properly.
  5. Ballast factor is between 0.85 and 0.90 for normal light output ballasts, and a minimum of 1.15 for high light output ballasts. Provide normal light output ballasts unless otherwise specified.
  6. Ballasts operate lamps at a frequency of 40 kHz or greater.
  7. Ballasts are UL 935 Listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
  8. Ballasts meet ANSI C82.11.
  9. Ballasts comply with the Federal Communications Commission rules and regulations, Title 47 CFR Part 18 Non-Consumer Equipment for EMI (power line conducted) and RFI (radiated).
  10. Ballasts withstand transients as specified in ANSI C62.41.
  11. Ballasts have class "A" sound rating.
  12. Lamp current crest factor is less than 1.7.
  13. Ballasts operate lamps with no visible flicker (3 percent flicker index).
  14. Ballasts start and operate T-8 lamps down to 0 degrees Fahrenheit (-18 degrees Celsius) or lower without shortening lamp life.

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15. Ballasts are warranted for a minimum of five years. Ballast manufacturer provides replacement ballast and pays all labor costs associated with replacing ballasts that fail during their warranty period.
  16. Ballasts are manufactured by one of the following: Universal "Triad HP", Osram/Sylvania "Quicktronic Professional", or Advance "Centium".
- C. Programmed rapid start electronic ballasts comply with the following:
1. Ballasts are suitable for operation at the voltage and frequency of the building circuits to which they are connected, and sustained variations of +/- 10 percent (voltage and frequency) with no damage to the ballasts.
  2. Input current Total Harmonic Distortion (THD) does not exceed 10 percent.
  3. Power factor is 0.90 or greater.
  4. Ballasts incorporate lamp shutdown circuitry for end of lamp life protection.
  5. Ballast factor is between 0.95 and 1.05.
  6. Ballasts operate lamps at a frequency of 40 kHz or greater.
  7. Ballasts are UL 935 Listed, Class P, Type 1 Outdoor, and CSA certified where applicable.
  8. Ballasts meet ANSI C82.11.
  9. Ballasts comply with the Federal Communications Commission rules and regulations, Title 47 CFR Part 18 Non-Consumer Equipment for EMI (power line conducted) and RFI (radiated).
  10. Ballasts withstand transients as specified in ANSI C62.41.
  11. Ballasts have class "A" sound rating.
  12. Lamp current crest factor is less than 1.7.
  13. Ballasts start and operate lamps down to 0 degrees Fahrenheit (-18 degrees Celsius) or lower without shortening lamp life.
  14. Ballasts are warranted for a minimum of five years. Ballast manufacturer provides replacement ballast, and pays all labor costs associated with replacing ballasts that fail during their warranty period.
  15. Ballasts for T-5 standard and high output linear fluorescent lamps are manufactured by one of the following: Universal "Triad PRS", Osram/Sylvania "Quicktronic Professional PROStart", or Advance "Centium".

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16. Ballasts for T-8 linear and U-bent fluorescent lamps be manufactured by one of the following: Universal "Accustart", Osram/Sylvania "Quicktronic Professional PROStart", or Advance "Mark V".
17. Ballasts for T-5 "biax" 2G11-base lamps (excluding NEMA FT40W) are manufactured by one of the following: Universal "Triad PRS" or Advance "Centium".
18. Ballasts for compact fluorescent lamps are manufactured by one of the following: Universal "Triad PRS", Osram/Sylvania "Quicktronic Professional CF Universal", or Advance "Smartmate".

D. Preheat electromagnetic compact fluorescent ballasts comply with the following:

1. Ballasts are encapsulated or potted to ensure maximum thermal and structural integrity.
2. Power factor is 0.90 or greater.
3. Ballast factor is between 0.95 and 1.05.
4. Ballasts are warranted for a minimum of two years. Ballast manufacturer provides replacement ballast and pays all labor costs associated with replacing ballasts that fail during their warranty period.
5. Ballasts are manufactured by Universal, Advance, or Robertson Worldwide.

E. Electronic ballasts for Metal Halide lamps comply with the following:

1. Ballasts operate from a 50/60 Hz input source of 108-305 volts with no damage to the ballasts.
2. Input current Total Harmonic Distortion (THD) does not exceed 15 percent.
3. Power factor is 0.90 or greater.
4. Ballast is thermally protected and incorporate lamp shutdown circuitry for end of lamp life protection.
5. Ballast factor is 1.0.
6. Ballasts operate lamps at a frequency of less than 200 Hz.
7. Ballasts comply with the Federal Communications Commission rules and regulations, Title 47 CFR Part 18 Non-Consumer Equipment for EMI (power line conducted) and RFI (radiated).
8. Ballasts have class "A" sound rating.
9. Lamp current crest factor is less than 1.5.

10. Ballasts are designed to provide reliable lamp starting down to negative 20 degrees Fahrenheit (negative 30 degrees Celsius).
  11. Ballasts are warranted for a minimum of five years. Ballast manufacturer provides replacement ballast, and pays all labor costs associated with replacing ballasts that fail during their warranty period.
  12. Ballasts are manufactured by one of the following: Aromat, or Advance "e-Vision".
- F. Emergency battery packs (also known as emergency ballasts): An emergency battery pack incorporates a battery, charger, inverter circuit, and control electronics into one housing. Emergency battery packs comply with the following:
1. Emergency battery packs are UL 924 Listed, and meet or exceed all National Electrical Code (NFPA-70) and Life Safety Code (NFPA-101) emergency lighting requirements.
  2. Emergency battery packs incorporate maintenance-free Nickel-Cadmium (Ni-Cad) batteries.
  3. Emergency battery packs are designed to provide a minimum of 90 minutes of emergency illumination. Provide longer duration when required by code.
  4. Unless otherwise specified, emergency battery packs provide the following minimum initial lumen output per battery pack:

Lamp Type	Lumens
T-8, T-5	825
T-5 High Output	1,300
T-5 "biax" 2G11-base	825
Compact Fluorescent	650
  5. Emergency battery packs are warranted for a minimum of five years. Manufacturer provides replacement emergency battery pack and pays all labor costs associated with replacing emergency battery packs that fail during their warranty period.
  6. Emergency battery packs are manufactured by Iota Engineering or Bodine.

### 2.3 LAMPS

- A. Conform to the ANSI C78 series that is applicable to each type of lamp.

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B. Fluorescent lamps (T-8, T-5, and T-5 2G11-base):

1. Rated average life is a minimum of 20,000 hours when operated three hours per start. A shorter rated average life is acceptable for 50W and 55W T-5 2G11-base lamps only.
2. Unless otherwise noted, lamp phosphors are a composition that includes rare earth phosphors, with a correlated color temperature (CCT) of 3500 degrees Kelvin and a color rendering index (CRI) of not less than 80 (NEMA designation RE 835).
3. All T-8 linear fluorescent lamps are TCLP-compliant. Provide only GE "Ecolux", Philips "ALTO", or Osram/Sylvania "Ecologic" lamps.

C. Compact fluorescent lamps (T-4):

1. Rated average life is a minimum of 10,000 hours when operated at three hours per start.
2. Lamp phosphors are a composition that includes rare earth phosphors, with a correlated color temperature (CCT) of 3,000 degrees Kelvin and a color rendering index (CRI) of not less than 80 (NEMA designation RE 830).
3. T-4 "twin tube" compact fluorescent lamps rated 13W or lower (NEMA CFT13W, CFT9W, and CFT7W) have two-pin bases. Four-pin bases are required for all other compact fluorescent lamps.

D. All lamps are manufactured by GE, Osram/Sylvania, Philips, or Venture.

2.4 FINISHES

- A. Provide metal finishes and paint colors as selected by the Architect.
- B. Where a "Custom Color Finish" is specified but not identified, match sample provided by Architect.
- C. Apply paint finishes over corrosion-resistant treatment or primer, free of streaks, runs, stains, blisters, and similar defects.
- D. When the Architect issues no instructions pertaining to finishes, provide standard finishes as follows:
  1. Unpainted non-reflecting surfaces are satin finished and coated with a baked-on clear lacquer to preserve the surface. Where aluminum surfaces are treated with an anodic process, the clear lacquer coating may be omitted.
  2. Enamel coatings are of the high temperature baked-on type. Enamel reflecting surfaces are white with 90 percent minimum initial reflectance.
  3. Porcelain enameled finishes meet or exceed R.L.M. standards in all respects.



4. Painted surfaces on fixtures for use outdoors or in damp locations exhibit weather and moisture resisting qualities equal to surfaces having epoxy based coatings. Unpainted aluminum are anodized.
5. Unpainted aluminum reflecting surfaces are treated with an Alzak or anodizing process to insure a permanent reflective surface with a minimum 87 percent reflectance.

## 2.5 EXIT SIGNS

### A. Exit signs comply with the following:

1. Color, letter height, and letter stroke comply with all requirements of applicable state and local building codes.
2. Edge-lit exit signs which are visible from two directions have a mylar film inserted in the center of the panel, so that the letters are not visible from the wrong direction.

### B. Self-illuminated exit signs equipped with integral battery packs for emergency operation comply with the following:

1. The battery is a sealed, maintenance-free nickel-cadmium battery with a five-year warranty.
2. The charger is solid-state, fully automatic with a sealed transfer relay.
3. When the input voltage drops to 80 percent of normal or below, the relay energizes the lamps from the battery pack, instead of the normal building power. When normal power is restored, the relay energizes the lamps from the normal building power, automatically recharge the battery, and float it on the charger.

## 2.6 LIGHTING CONTROLS

### A. Lighting controls including - but not limited to - switches, and other miscellaneous devices are provided as part of the electric work.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Set light fixtures plumb, square, and level with ceiling, walls, and/or ground and secure according to manufacturer's written instructions and approved Shop Drawings. Support fixtures according to requirements of Division 26 Section "Supporting Devices" and Division 26 Section "Seismic Controls for Electrical Work".
- B. Fixtures suspended more than 48 inches (1200mm) below ceiling are braced to limit swinging.
- C. When lamps are not specified, lamp units according to manufacturer's instructions.

- D. Light fixture locations shown on electrical drawings are approximate. For light fixtures in building equipment rooms (Mechanical, Electrical, Telecommunications, etc.), coordinate fixture locations with equipment, so that optimal light distribution is obtained, without obstructing access to equipment. All other light fixtures are installed as shown on architectural drawings, or as directed by Architect.
- E. Fixtures with asymmetric light distributions are oriented as shown in manufacturer's installation instructions. When manufacturer's instructions are not clear, obtain clarification from Architect before proceeding with installation.

### 3.2 CONNECTIONS

- A. Ground light fixtures. Tighten electrical connectors and terminals, including grounding connections, according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

### 3.3 FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Verify normal operation of each fixture after fixtures have been installed and circuits have been energized with normal power source. Interrupt electrical power to demonstrate proper operation of emergency lighting.
- C. Repair and retest malfunctioning fixtures and components. Repeat procedure until all units operate properly.
- D. Replace fixtures that show evidence of corrosion during Project warranty period.
- E. All permanent light fixtures used for temporary light during the construction phase for a period over 1,000 hours for fluorescent and HID sources and 100 hours for incandescent are relamped prior to acceptance.

### 3.4 ADJUSTING AND CLEANING

- A. Clean fixtures after installation. Use methods and materials recommended by manufacturer.
- B. Adjust aimable fixtures to provide required light intensities. Aim all adjustable fixtures after dark, under the direction of Commissioner.

### 3.5 SPARES

- A. Provide spare components to City of New York at completion of project as outlined below:
  - 1. For fluorescent, compact fluorescent, and HID lamps, provide one spare of each type for every ten installed (ten percent spare). Provide a minimum of four spare lamps of each type.

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2. For ballasts and transformers, provide one spare of each type for every twenty installed (five percent spare). Provide a minimum of one spare of each type.
3. For interior lenses, louvers and diffusers, provide one spare of each type for every twenty-five installed (four percent spare). Provide a minimum of one spare of each type.

END OF SECTION 26 51 00

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## SECTION 26 60 03 - FIRE PROTECTIVE ALARM SYSTEM

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. This section includes the following basic electrical materials and methods to complement other Division 21, 23 and 26 Sections.
- B. This section includes a Fire Protective Alarm (FPA) system of the addressable initiating device type, consisting essentially of the following components:
  - 1. Outlying analog-addressable smoke (and smoke-heat) sensor/detectors.
  - 2. Outlying addressable manual fire alarm stations.
  - 3. Outlying addressable heat detectors.
  - 4. Outlying sprinkler and fire standpipe alarm and supervisory devices furnished and installed separate from the work of this section.
  - 5. Outlying addressable modules (monitoring or control) in addressable module boxes or cabinets.
  - 6. Outlying loudspeaker stations; each with integrally mounted visual fire warning (strobe) except as otherwise specified.
  - 7. Outlying visual warning signals (strobes).
  - 8. Outlying system equipment control cabinets (also referred to as equipment control cabinets).

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Related Section: The following Sections contain requirements that relate to this Section:
  - 1. Section 26 05 00 "Common Work Results for Electrical".
  - 2. Section 26 05 48 "Seismic Controls for Electrical Work".
  - 3. This section is a part of each Division 26.

#### 1.3 DEFINITION

- A. FCS: Fire Command Station. Used interchangeably with FACP (see below)
- B. FACP: Fire Alarm Control Panel (see above).

#### 1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product Data for each type of system component specified including dimensioned plans and elevations showing minimum clearances and installed features and devices. Include list of materials and Underwriters Laboratories listing data.
- C. Wiring diagrams from manufacturer differentiating clearly between factory- and field-installed wiring. Include diagrams for equipment and for system with all terminals and interconnections identified. Make all diagrams specific to this Project and distinguish between field and factory wiring.
- D. Device Address List: Coordinate with final system programming.
- E. Product certificates signed by manufacturers of fire alarm system components certifying that their products comply with specified requirements.
- F. In addition to routine submission of above materials, make all filings with the Building Department, Fire Department, and any other agencies having jurisdiction. Where filings require the engineer's signature, documents are submitted for his review and signature. This responsibility includes furnishing of required quantities of floor plans, descriptive notes and/or specifications, wiring diagrams, shop drawings and amendment forms, as well as the payment of any required filing fees.
- G. Permits necessary for installation of the work are obtained prior to the commencement of the work. All permit costs and inspection fees are included as part of the required work.
- H. Record of field tests of system.

#### 1.5 QUALITY ASSURANCE

- A. Contact the fire alarm vendor for each building. Coordinate all the work required for the scope shown on the drawings. All the new equipment, devices and wiring shall match existing and be compatible with existing fire alarm systems. Upgrade existing fire alarm system as required to accommodate equipment devices. Coordinate with the vendor all the connections of all new equipment and devices to existing fire alarm system.
- B. Single-Source Responsibility: Obtain fire alarm components from a single source who assumes responsibility for compatibility of system components.
- C. Compliance with Local Requirements: Comply with the applicable portions of the New York City Electrical Code, and the Administrative Code of the City of New York. Comply with latest provisions of Building Code of the City of New York.
- D. All equipment is approved by the Materials and Equipment Acceptance Division (MEA) of the Building Department or by The Board of Standards and Appeals (BSA). The installation meets with the approval of the Fire Department, the Building Department and all other agencies having jurisdiction.

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- E. Comply with NFPA 70 as amended by state and local codes.
- F. Comply with NFPA 72.
- G. Comply with Americans with Disabilities Act (ADA).
- H. Listing and Labeling: Provide fire alarm equipment, devices, wiring and components listed and labeled by Underwriters Laboratories and match the existing of the same in the buildings.
- I. The system is complete with all components and wiring required for compliance with all applicable codes and regulations, and for its operation as described hereinafter. No exclusion from or limitation in the symbolism used on the drawings or the language used in these specifications are interpreted as a reason for omitting any appurtenances or accessories required to enable the system to perform the specified functions.
- J. Upon completion of the installation (and as directed by the Commissioner), the work includes making all arrangements and providing any assistance necessary for inspection and test as required for approval by the Fire Department. Modifications, adjustments and/or corrective work necessary to obtain approval along with subsequent inspection and test resulting from the issuance of a "Notice of Defect" precedes any consideration of formal acceptance by the Commissioner. In conjunction with the above, training as deemed necessary to instruct authorized building personnel in the proper operation of the system also forms a part of the required work.

## PART 2 - PRODUCTS

### 2.1 NEW SCOPE OF WORK

- A. Contacts and phone numbers for the fire alarm system at each building are as follows:
  - 1. Clark Thomas Building  
IRL - 718-491-0642
  - 2. HELP SEC Building  
Fire Com - 718-899-6100
  - 3. Keener Building  
IRL - 718-491-0642

Coordinate all the work required for the scope shown on the drawings with the vendors. All the new equipment, devices and wiring shall match existing and be compatible with existing fire alarm systems. Upgrade existing fire alarm system as required to accommodation equipment devices. Coordinate with the vendor all the connections of all new equipment and devices to existing fire alarm system. All new equipment, devices and wiring for the boiler room of Clark Thomas Building and in pre-fabricated plants shall be in compliance with National and NYC Code. Run all wiring in conduit.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

#### FIRE PROTECTIVE ALARM SYSTEM

26 60 03 -3

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- A. Install system according to New York City and NFPA standards referred to in Parts 1 and 2 of this Section.
- B. Each outlying component requiring a power supply for its proper operation receives this supply over wires extended from the central equipment in a code approved manner.
- C. Comply with the applicable requirements of other sections of Division 26 for locating and routing circuitry, for installing circuitry, for firestopping and for identification.
- D. Adjust the sensitivity of all smoke detector (sensors) on the basis of the actual environment to which each will be subjected (i.e., air movement, ambient dust/dirt levels and temperature, humidity levels) in accordance with manufacturers instructions.
- E. Paint the outside parts of all equipment cabinets and all junction boxes, pull boxes and outlet boxes red.

### 3.2 EQUIPMENT INSTALLATION

- A. Manual Pull Stations: Mount semiflush in recessed back boxes with top of operating handles 48 inches (122 cm) above the finished floor or lower as indicated.
- B. Water-Flow Detectors and Valve Supervisory Switches: Connect for each sprinkler valve station required to be supervised.
- C. Smoke Detectors: Install ceiling-mounted detectors not less than 4 inches (10 cm) from a side wall to the near edge. Install detectors located on the wall at least 4 inches (10 cm), but not more than 12 inches (30 cm) below the ceiling. For exposed solid-joist construction, mount detectors on the bottom of the joists. On smooth ceilings, install detectors not over 30 feet (9 meters) apart in any direction. Install detectors no closer than 60 inches (150 cm) from air registers.
- D. Loudspeaker/Strobes: Install 80 inches (203 cm) (to bottom of device) above the finished floor nor less than 6 inches (15 cm) below the ceiling. Install on flush-mounted back boxes with the device-operating mechanism concealed behind a grille or as indicated. Provide box extension and furnish collar where wall depth cannot accommodate flush backbox. Combine audible and visual alarms at the same location into a single unit.

### 3.3 WIRING INSTALLATION

- A. Wiring Method: Install wiring in metal raceway in accordance with the following. Conceal raceway except in unfinished spaces and as indicated.
- B. All conduit and cable required for the system, including control circuitry extensions, is included as part of the work involved in providing it. All cable used, regardless of whether or not it is run in conduit as noted below, has a minimum temperature rating of 150 degree C and is teflon (or other approved low smoke, low flame producing fluoropolymer) insulated with fifteen (15) mil minimum insulation thickness. All cable used is protected with a red outer jacket of twenty-five (25) mils teflon (or other approved as noted above). Where necessary for proper system operation, circuitry utilizes twisted pairs, shielded if required. Cable is UL type FPLP repetitively labeled with its UL listed rating as "NYC Cert. Fire Alarm Cable".



- C. Cables is run in conduit. Conduit is electric metallic or threaded conduit subject to the restrictions specified elsewhere for light and power circuitry, except that any runs supplying 120 (or 120/208 volts from the system central equipment to outlying equipment are run only in threaded rigid steel conduit.
- D. Minimum conductor size for circuitry supplying loudspeakers or strobes is #16 AWG copper and for all other circuitry not specifically sized elsewhere minimum conductor size is #18 AWG copper.
- E. Wiring within Enclosures: Install conductors parallel with or at right angles to the sides and back of the enclosure. Bundle, lace, and train the conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- F. Conduits are not permitted to enter the top of control cabinets. Only side and bottom entries are permitted.
- G. Cable Taps: Use numbered terminal strips in junction, pull or outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
- H. Color Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color code for alarm circuit wiring and a different color code for supervisory circuits. Color-code audible alarm-notification circuits differently from alarm-initiating circuits. Use different colors for visual alarm-notification circuits. Paint fire alarm system junction boxes and covers red.

### 3.4 GROUNDING

- A. Ground cable shields and equipment according to system manufacturer's instructions to eliminate shock hazard and to minimize, to the greatest extent possible, ground loops, common mode returns, noise pickup, cross talk, and other impairments.
- B. Signal Ground Terminal: Locate at main equipment rack or cabinet. Isolate from power system and equipment grounding.
- C. Connect to grounding electrode specified in Division 26 Section "Grounding and Bonding." Install grounding electrode conductors of type, size, location, and quantity as indicated. Comply with installation requirements of Division 26 Section "Grounding and Bonding."
- D. Ground equipment and conductor and cable shields. For audio circuits, minimize, to the greatest extent possible, ground loops, common mode returns, noise pickup, cross talk, and other impairments.

### 3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pretesting, testing, and adjustment of the system.

- B. **Pretesting:** After installation, align, adjust, and balance the system and perform complete pretesting. Determine, through pretesting, the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new ones and retest until satisfactory performance and conditions are achieved. Prepare forms for systematic recording of acceptance test results.
- C. **Report of Pretesting:** After pretesting is complete, provide a letter certifying the installation is complete and fully operable, including the names and titles of the witnesses to the preliminary tests.
- D. **Final Test Notice:** Provide a 10-day minimum notice in writing when the system is ready for final acceptance testing.
- E. **Minimum System Tests:** Test the system according to the procedures outlined in NFPA 72. Minimum required tests are as follows:
  - 1. Verify the absence of unwanted voltages between circuit conductors and ground.
  - 2. Test all conductors for short circuits using an insulation-testing device.
  - 3. With each circuit pair, short circuit at the far end of the circuit and measure the circuit resistance with an ohmmeter. Record the circuit resistance of each circuit on the record drawings.
  - 4. Verify that the control unit is in the normal condition as detailed in the manufacturer's operation and maintenance manual.
  - 5. Test initiating and notification circuits for proper signal transmission under open circuit conditions. One connection each should be opened at not less than 10 percent of the initiating and notification devices. Observe proper signal transmission according to class of wiring used.
  - 6. Test each initiating and notification device for alarm operation and proper response at the control unit. Test smoke detectors with actual products of combustion.
  - 7. Test the system for all specified functions according to the approved operation and maintenance manual. Systematically initiate specified functional performance items at each station, including making all possible alarm and monitoring initiations and using all communications options. For each item, observe related performance at all devices required to be affected by the item under all system sequences. Observe indicating lights, displays, signal tones, and annunciator indications. Observe all voice audio for routing, clarity, quality, freedom from noise and distortion, and proper volume level.
  - 8. **Test Both Primary and Secondary Power:** Verify by test that the secondary power system is capable of operating the system for the period and in the manner specified.

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- F. Retesting: Correct deficiencies indicated by tests and completely retest work affected by such deficiencies. Verify by the system test that the total system meets the Specifications and complies with applicable standards.
- G. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log. Submit log upon the satisfactory completion of tests.
- H. Tag all equipment, stations, and other components at which tests have been satisfactorily completed.

3.6 CLEANING AND ADJUSTING

- A. Cleaning: Remove paint splatters and other spots, dirt, and debris. Touch up scratches and marred finish to match original finish. Clean unit internally using methods and materials recommended by manufacturer.
- B. Adjusting: Adjust sensitivity of each detector based on the environment to which it will be subjected.

3.7 ON-SITE ASSISTANCE

- A. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels, controls, and sensitivities to suit actual occupied conditions. Provide up to 3 requested adjustment visits to the site for this purpose.

END OF SECTION 26 60 03

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## SECTION 26 60 04 – CARBON MONOXIDE GAS DETECTION SYSTEM

### PART 1 - GENERAL

#### 1.1 GENERAL

- A. Provide a complete installation of a toxic gas detection system including a main control panel, sensors and audible/visual alarm devices that can be linked to a Controller or a Building Automation System (BAS).
- B. The system shall include, but not be limited to, the following:
  - 1. Future expandability
  - 2. Display of toxic gas concentration
  - 3. Ability to modify alarm set points
  - 4. Automatic and manual fan start/stop
  - 5. Display of alarm status
- C. The system shall be by: Honeywell, MSA, Kele or approved equal.

### PART 2 - PRODUCTS

#### 2.1 DETECTORS

E3Point Model E3SM (base unit) & E3SCO (Carbon Monoxide plug-in cartridge)

- A. Transmitter will be powered by the control panel power supply rated at 24 Vac. Fully addressable gas transmitter must be capable of communicating digitally with controller through an RS-485 communication port. Gas transmitters must be installed in a true daisy chain with an end of the line resistor on the last transmitter. The gas transmitter will incorporate an electrochemical cell for toxic gas monitoring and catalytic bead sensor for combustible gases. Unit sensing cell must compensate for variations in relative humidity and temperature to maintain high levels of accuracy.
- B. When placed in a network configuration the transmitter will be capable of transmitting gas concentrations through the controller. For local activation of fans or louvers (or other equipment) an on-board DPDT relay 5 A, 30 Vdc or 250 Vac (resistive load) will be activated at programmable set points (and programmable time delays) through the control panel. An LCD display will provide gas concentration readings.
- C. Transmitter will be capable of operating within relative humidity ranges of 5-95% and temperature ranges of -4° F to 104° F (-20° C to 40° C).
- D. Unit will be certified to ANSI/UL 61010-1 label and CAN/CSA-C22.2 No. 61010-1. Transmitter must be manufactured in an ISO 9001-2000 production environment.

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- E. The transmitter should have a plug-in capability for a gas cartridge with a smart sensor capable of self-testing.
- F. For local activation of audible alarms, the transmitter shall have an on-board device able to generate an audible output of 85 dBA @ 10 ft (3 m).
- G. Detector alarm levels are to be activated and the unit is to be installed in accordance with the following parameters:

TOXIC GASES	1st ALARM SET POINT (TLV-TWA)	2nd ALARM SET POINT (TLV-STEL)	3 <sup>rd</sup> ALARM SET POINT	MOUNTING HEIGHT	COVERAGE RADIUS
Carbon Monoxide (CO)	25 PPM	200 PPM	225 PPM	5 ft (150 cm) above finished floor	50 ft (15 m)

- H. Local Building Codes recommendations take precedence over these parameters. Coverage can differ depending on application.

2.2 CONTROLLER: VA301C-DLC

- A. The control panel must be capable of communicating digitally with the networked transmitters and relay modules through three RS-485 Modbus communication buses. Each communication bus must be capable of accepting a combination of up to 32 addressable transmitters, relay modules, or annunciator panels at a maximum distance of 2,000 feet. The power supply shall be of either 24 Vac or 24 Vdc
- B. The controller will manage four internal DPDT relays at fully programmable alarm levels (and within programmable time delays) and be capable of activating multiple relay modules of eight relays each. The relay rating will be no lower than 5 A, 30 Vdc or 250 Vac (resistive load).
- C. The controller must include a self-test function that allows for the activation/deactivation of all the programmed outputs by simulating a continuous 5% increase/decrease value until the maximum/minimum value is reached.
- D. The controller must include a real-time clock that enables operation of the outputs for a specific timeframe.
- E. The controller must also include an energy saving feature that allows for output operation on alarms set at the max, min or average value of a specific group of transmitters. This feature must also allow for the activation of outputs upon a certain number of a specific group ( $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{1}{3}$  and  $\frac{1}{4}$ ) of transmitters reaching their alarm levels. A total of 128 groups can be assigned.
- F. The controller will be capable of communicating with an annunciator panel that can serve as a remote display panel in a secondary control room.

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- G. The controller will indicate the exact concentration of gas, the gas detected, and the location of the sensor by sweeping through the network and displaying the detected levels at each point on a graphic LCD display.

## 2.3 ACCESSORIES

### A. Relay Modules VA301R8

- 1. Relay module will be powered by the control panel's power output or by power transformer rated at 24 Volts AC or DC (always respect minimum voltage requirements at device). Module must be capable of communicating digitally with the Vulcain controller through an RS-485/MODBUS communication port. Relay module will have eight relays rated at no lower than 5A, 30 Vdc or 250 Vac (resistive load). Honeywell Analytics model VA301R8

### B. Detector Guards E3PT- GUARD

- 1. The grid is made of a 9-gauge steel wire. The guard must be designed to allow calibration without removing the guards.

### C. Provide 24 hour battery backup for this system.

## PART 3- EXECUTION

### 3.1 INSTALLATION

- A. Install hazardous gas monitoring equipment including sensors, audible alarms, control panels as shown on Contract Drawings, and as recommended by manufacturer of equipment, and as required by authorities having jurisdiction.
- B. Install conduit and wiring from sensors to control panel and to the fan starters/ HVAC control panel as recommended by manufacturer of equipment.

### 3.2 SEQUENCE OF OPERATION

- A. Upon detection of CO gas by any detector, all alarms will be activated.

### 3.3 COMMISSIONING

- A. After installation, test and calibrate equipment to demonstrate operation of functions described above under sequence of operation by manufactures certified service technician.
- B. Provide testing kits (including gas bottles) for testing and calibration by Commission technician.

3.4 WARRANTY

A. Limited Warranty

1. The CO sensor manufacturer shall furnish to buyer, in writing, a 1-year warranty. Warranty shall cover repair or replacement, free of charge, for any part that proves to be defective in material or workmanship. Return shipping costs shall be prepaid by the manufacturer. The repair or replacement of any such defective part shall be the manufacturer's sole and exclusive responsibility and liability under the warranty.

END OF SECTION 26 60 04



## **SECTION 31 00 00 – EARTHWORK**

### **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. The Work of this Section includes all labor, materials, equipment, and services necessary or ancillary to complete the excavation, subgrade preparation, filling and grading as shown on the Drawings and specified herein including, but not limited to the following:
  1. Excavation of all earth and man made improvements to the required depths and indicated on the Contract Documents.
  2. Providing additional approved suitable material for filling and rough grading.
  3. Legal disposing, off the site of excavated materials unsuitable for filling or backfilling.
  4. Removal of existing slabs, curbs, existing tanks, abandoned pipes and utilities, rubble, etc.
  5. Filling, grading and compacting to required elevations as specified in the Contract Documents.
  6. Excavating, filling, grading and compacting to required elevations for the appurtenances and site work.
  7. Other labor and materials as may be reasonably inferred to be required to make the work under this Section complete.
  8. Providing health and safety protection for workers.
  9. Excavating trenches for the installation of utilities
  10. Backfilling trench with bedding material and specified herein and finish filling trenches with suitable material to proposed subgrade.
  11. Compacting subgrade, bedding, and backfill materials in an acceptable manner.
  12. Compliance with all federal, state, and local environmental and health and safety regulations, including but not limited to Occupational Safety and Health Administration (OSHA).

- B. In the event that any part of the excavation is carried beyond the depth and the dimensions indicated on the drawings or called for in the specifications through error or by intention to remove obstruction then the Contractor, at his own expense, shall furnish and install gravel, meeting the requirements set forth herein, with which to fill to the required level, in all locations.

C. Definitions

1. Wherever the word "excavating," "excavate," or "excavation," "carried down," "remove," etc., are used, they shall be taken to include the removal of all existing conditions, including all brick work, all rubble, rubbish, earth, as well as rock, boulders, piles, old concrete and all other materials and obstructions encountered; they shall also be taken to include all sheet piling, bracing, pumping, and all operations and items needed for the proper execution of the work.
2. Where "earth" is referred to herein it shall include the excavation of materials which can be dug either with normal power shovels, or by hand and without requiring wedging, plug and feathering, or chipping.
3. Where the words "finished grades," "finished grade lines," or "future finished grade," appear in these specifications, they shall be taken to mean the finished elevations as indicated on the drawings.
4. Rough grading consists of cutting to the elevation herein established with a permissible tolerance of plus or minus 1 inch.

1.3 RELATED WORK

- A. Cast-in-place Concrete – Section 03 30 00

1.4 REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

- A. Only the latest editions (at bid date) of the following standards shall form part of this Specification to the extent indicated by the reference thereto:
1. Title 29, Code of Federal Regulations (CFR), Subpart P, "Excavations"
  2. Occupational Safety and Health Administration (OSHA) Regulations
  3. American Society for Testing and Materials (ASTM)
    - a. ASTM D1557 – Test for Moisture-Density Relation of Soils (Modified Proctor Method)
  4. American Association of State Highway and Transportation Officials (AASHTO)
  5. New York City Building Code
- B. Geotechnical Engineering Study prepared by Langan Engineering and Environmental Services, Inc, P.C. dated 24 August 2012.

1.5 SUBMITTALS

- A. Unless otherwise indicated, transmit all submittals for review by the Engineer no less than two weeks before proceeding with ordering, fabricating, or any other work of this Section. Submittal review will be of the concept only and shall not in anyway diminish or limit the Contractor's responsibility for the design, performance, and quality of the work of this section.
- B. Test Reports: Submit the following information for each sources of each material submitted for review and approval by the Commissioner:
  - 1. Particle size analysis in accordance with ASTM D 422 (sieve only)
  - 2. Soil classification in accordance with ASTM D 2487
  - 3. Moisture content in accordance with ASTM D 2216
  - 4. Modified Compaction Curve in accordance with ASTM D 1557
- C. Samples: Submit a 50-lb (minimum) sample of each borrow material to the lab testing agency, including material grain-size and laboratory compaction curve in accordance with ASTM D-1557 proposed for use as backfill, fill, drainage fill etc.
- D. Samples: Submit a 12 inch by 12 inch sample of each filter fabric proposed for use.
- E. If the Contractor requests changes to these Specifications, Contractor shall submit in writing the requested changes to the Commissioner prior to the implementation of the change. Commissioner will review the request and notify Contractor in writing of his decision.
- F. The Contractor shall submit plan(s) for Health and Safety Protection at least two weeks prior to bringing workers on site that are not trained pursuant to the health and safety requirements.

1.6 QUALITY ASSURANCE

- A. Qualifications
  - 1. Company specializing in performing the Work of this Section shall have a minimum of 3 years of experience and shall have worked on 3 projects of similar size.
  - 2. The work shall be performed by OSHA-certified workers.
- B. Design Supervision: The Contractor shall retain services of a Professional Licensed Engineer licensed in the State of New York who shall design and supervise installation of all work of this Section.
- C. Only the latest editions (at bid date) of the following standards shall form part of the Specification to the extent indicated by the reference thereto:

1. ASTM D422 - Standard Test Method for Particle Size Analysis of Soils
2. ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
3. ASTM D2487 - Test Method for Classification of Soils for Engineering Purposes

D. New York City Building Code (2008 Edition)

1.7 PROJECT CONDITIONS

- A. Prior to entering his bid, the Contractor shall visit the site and familiarize himself with all existing conditions. All nearby existing buildings and utilities shall be inspected by the Contractor prior to entering his bid.
- B. The Commissioner makes no predictions or representations regarding the character or extent of soil, obstructions or other subsurface conditions to be encountered during the work. The Contractor shall make his own deductions of the subsurface conditions which may affect the methods or cost of construction of the work hereunder, and he agrees that he will make no claims for damages or compensations, except as are provided under the agreement, should he find conditions during the progress of the work different from those as calculated and/or anticipated by him. Additional borings and other exploratory operations may be performed by Contractor, at the Contractor's option and following the Commissioner's approval. No change in the Contract Sum will be authorized for such additional exploration undertaken by the Contractor.
- C. The Contractor, by careful examination, shall inform himself as to the nature and location of the work; the conformation of the ground, the nature of the subsurface conditions; the locations of the groundwater table; the character, quality and quantity of the materials to be encountered; the character of the equipment and facilities needed preliminary to and during the execution of the work; and all other matters which can be in any way effect the work.
- D. The Contractor shall investigate the conditions of public thoroughfares and roads as to availability, clearances, loads, limits, restrictions, and other limitations affecting transportation to, ingress and egress of the site of the work. The Contractor shall conform to all New York City and State, and Federal regulations in regard to the transportation of materials to and from and at the job site and shall secure in advance such permits as may be required.
- E. The Contractor shall perform the work in this Section in a manner that will result in no harmful effects to existing on-site or off-site structures. Any damage to structures resulting from the Contractor's work shall be the sole responsibility of the Contractor.
- F. Existing Utilities: Locate existing underground utilities in and beyond the areas of work. If utilities are indicated to remain in place, provide adequate means of support and protection during the work.
  1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility Commissioner immediately for directions.

Cooperate with Commissioner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility Commissioner.

2. Coordinate with utility companies for shutoff of services prior to the removal of any on-site utilities.
- G. Examine drawings to determine sequence of operations, and relation to work of other trades. Start of work will signify acceptance of field conditions and will acknowledge coordination with other trades.

#### 1.8 PROTECTION

- A. All Contractor personnel shall wear personal protective equipment and protective clothing consistent with the levels of protection required for this work as specified by OSHA and the Contractor's health and safety plan.
- B. The Contractor shall be responsible for the safety of their operation, and for any damage that may result from the Contractor's work. At a minimum, Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, proper safeguards for the protection of Workers and the public and post danger warnings as required by law or otherwise required by the Contract Documents against hazards created by the Contractor's operation, and furnish, install and remove after completion of the work, all signs, lights, barricades, fencing and other equipment as may be necessary for the safe execution of the Work.
- C. The Contractor shall maintain safe sidewall slopes or provide adequate shoring. The excavation shoring shall meet all applicable New York City Department of Building Codes and OSHA requirements 29 CFR 1926.
- D. Prior to commencement of any work, consult the records for existing utilities, and note all conditions and limitations, which might affect the work required under this section.
- E. The Contractor shall become acquainted with the existence and location of all surface and subsurface structures and utilities adjacent to the project site.
- F. The work shall be executed so that no damage or injury will occur to public nor adjoining or adjacent structures, streets, paving, sewers, gas, water, electric or any other pipes. Should any damage or injury caused by the Contractor, or anyone in Contractor's employ, or by the work under this Contract occur, the Contractor shall, at his own expense, make good such damage and assume all responsibility for such injury.
- G. The Contractor shall protect all existing utilities (including sewers, storm lines, electrical lines and telecommunication lines) to remain in use adjacent to the area affected by the work of this project.
- H. Monuments, bench marks and other reference features on streets bounding this project, shall be protected. Should these be disturbed in any manner, the Contractor shall have them replaced at own expense.

- I. Excavation work shall be restricted to hours indicated in the Contract Documents. The excavation shall not be carried to final grades during freezing weather without providing complete protection against freezing of the subgrades as specified hereinafter. Complete protection against freezing shall also be provided if freezing weather sets in after completion of the excavation to final subgrade. This protection shall include adequate heating and coverage of the area to maintain temperatures above freezing until foundations have been concreted and backfilled.
- J. Where excavations have been brought to the bottom elevations called for on the drawings, and the bottom of these excavations become unsuitable in the opinion of the Commissioner because of inadequate protection by the Contractor, these excavations shall be carried to lower depths sufficient to provide stable bearings as determined by the Commissioner. Such added excavation shall be considered as set forth in article "Errors in Depth" of this section.

#### 1.9 ERRORS IN DEPTH

- A. In the event that any part of the excavation is carried through error, beyond the depth and the dimensions indicated on the drawings or called for in the specifications, then the Contractor, at his own expense, shall furnish and install gravel with which to fill to the required level, in all locations except beneath footings.

#### 1.10 DESIGN OF TEMPORARY WORK

- A. All temporary work shall be designed, signed and stamped by a Professional Engineer licensed in the State of New York.
- B. Temporary work shall be installed so that the permanent work can be conveniently completed.
- C. Temporary work shall be maintained and kept in good condition throughout the duration of the project.
- D. Temporary work shall be changed, shifted, rebuilt, etc., as needed to suit the conditions of the permanent work.

### PART 2 - PRODUCTS

#### 2.1 FILL MATERIALS

- A. Unsatisfactory Soils are USCS soil classification groups GC, OL, OH, and PT as defined by ASTM D2487. Unsatisfactory soils cannot be used as fill. The Contractor should stockpile unsatisfactory soils separately from other material. Stockpiling and legal disposal of unsatisfactory soils shall be in compliance with all environmental and health and safety regulations.
- B. Imported Fill shall only be accepted from certified sources and will require approval by the Architect's Environmental Engineer. The Commissioner reserves the right to test imported fill material for conformance with these specifications. Flat structured material such as mica (the main component of "mole" rock) falling into the acceptable gradation

or other material affecting the permeability and structural characteristics of the sand material shall be no more than .4% of the total material.

1. Controlled Fill material shall consist of well graded sand, gravel, crushed rock recycled concrete aggregate or a mixture of these having a maximum of 10% passing the No. 200 sieve as determined from the percent passing the #4 sieve. Suitable material shall be free of organic and other deleterious material and shall have a maximum particle size no greater than 2 inches. The material shall meet the environmental requirements of the project.
2. Rock or stone larger than 4 inches in largest dimension may be mixed with suitable material and may be used as fill up to 3 ft below beneath the proposed subgrade elevation at the discretion of the Commissioner. The fill must be mixed, placed and compacted such that no voids exist.
3. Rock or stone less than 2 inches in largest dimension and mixed with suitable material is acceptable as fill within the upper 3 ft of proposed subgrade.
4. Rock and concrete debris may be broken and/or crushed on-site to meet the above size requirements.

C. On-Site Material meeting the above requirements may be used as fill material.

## 2.2 GEOTEXTILE FILTER FABRIC

- A. Provide a heavy weight, non-woven geotextile filter fabric such as Mirafi 140N or approved equal.

## PART 3 - EXECUTION

### 3.1 CODES, PERMITS AND REGULATIONS

- A. Comply with all applicable laws, rules, and ordinances and regulations of the Federal Government, New York State, New York City, the Fire Department of the City of New York and other jurisdictions governing. All labor, materials, equipment, and services necessary to make complete the work described herein and meet the agency requirements shall be provided without additional cost to the Commissioner.
- B. Obtain and pay for all permits and licenses required to execute and complete the work.
- C. In case of conflict between regulations and specifications, the Contractor shall comply with the most stringent applicable codes, regulations or specifications.

### 3.2 SITE PREPARATION

- A. Any walls, retaining walls, cellar floors, foundations, foundation walls footings, timber sheeting, cribbing, and other existing abandoned items known or unknown encountered during excavation operations shall be removed.

- B. All structures and abandoned equipment and other similar items shall be entirely removed to the depth shown on the drawings where new work occurs and also at such deeper locations where they would impede construction of the remedial work.
- C. The Contractor shall protect all utility lines which are not to be abandoned and shall be responsible for any damage that may occur.

### 3.3 PUMPING AND DEWATERING

- A. Dewatering is not envisioned to be part of the project. Any dewatering incidental to the work is at the option of the Contractor. The Contractor shall supply adequate pumps, well points, appurtenances, power, drains, materials or other equipment and labor necessary to do all the pumping and dewatering needed to keep all excavations dry during the work and at such other times as the progress of the work may demand or as necessary to insure safety shall be provided.
- B. The Contractor shall obtain all necessary permits for discharging water to the NYCDEP sewer system and be responsible for all fees.
- C. The dewatering system or systems shall be installed and operated in such a manner as to avoid the movement of fines or loss of ground from below the bearing level and shall not influence the stability of surrounding areas. The facilities needed to eliminate loss of ground shall be included.

### 3.4 EXCAVATING - GENERAL

- A. Contractor will excavate soil and directly load into trucks for transportation offsite. If live loading is not practical, temporary stockpiles less than 500 cubic yards can be used.
- B. Excavation shall include removal and legal disposal of all materials encountered regardless of the nature of the materials and shall be understood to include but not limited to soil, boulders, earth, hardpan, fill, foundations, structures, slabs, walls, utilities, pavements, curbs, piping and debris, and others.
- C. All excavation shall extend to the depths required for the installation of the work as Indicated on the drawings. When excavations have reached the required depth.
- D. The bottom of excavations shall be leveled off and graded excavation bottom shall be verified by surveyor.

### 3.5 EXCAVATING - UTILITY TRENCHING

- A. Contact local utility companies before excavation begins. Dig trenches at proper width and depth for laying pipe, conduit, or cable and in accordance with utility company requirements. Cut trench banks for safety and remove stones as necessary to avoid point-bearing.
- B. All trench excavation side walls shall be sloped, shored, sheeted, braced or otherwise supported by means of sufficient strength to protect the workmen within them in



accordance with the applicable rules and regulations established for construction by the Department of Labor, Occupational Safety and Health Administration (OSHA), and by local ordinances. Lateral travel distance to an exit ladder or steps shall not be greater than 25 feet in trenches 4 feet or deeper.

- C. Trench width requirements for pipe, conduit, or cable shall be the minimum practical width that will allow for proper compaction of trench backfill and satisfy safety and utility company regulations.
- D. Accurately grade trench bottom to an elevation 6 inches below the pipe, as per bedding details in construction drawings. Provide uniform bearing and support for each section of pipe on bedding material at every point along the entire length, except where necessary to excavate for bell holes, pipe joints, or other required connections. Dig bell holes and depressions for joints after trench bottom has been graded. Dig no deeper, longer, or wider than needed to make the joint connection properly.
- E. During excavation, stockpile excavated material suitable for backfilling in an orderly manner far enough from the trench to avoid overloading, slides, or cave-ins.
- F. Any abandoned structures, utilities, or debris discovered during excavation shall be removed or filled in accordance with this section.
- G. Utility alignments have been designed to avoid expected obstructions wherever possible. If unanticipated significant obstructions are encountered during utility installation work immediately notify the Commissioner.
- H. Prevent surface water from flowing into trenches or other excavations by temporary grading or other methods, as required. Remove accumulated water in trenches or other excavations by pumping or other acceptable methods. Water shall not be directly pumped to the city sewer system.
- I. Utility installation shall meet all minimum pipe installation depths, as set forth in the applicable codes and ordinances, measured from finished grade or the paved surface.

### 3.6 BACKFILLING, COMPACTING AND GRADING

- A. Backfilling shall not be performed until work has been inspected by the Commissioner nor any filling be placed until, in the opinion of the Commissioner, walls have sufficiently set to withstand the pressure, and as hereinafter specified in another Section. Bulldozers, trucks and other mechanical contrivances used in the placement of backfill are expressly prohibited from approaching within eight feet of existing buildings. All shavings, wood, paper and deleterious materials shall be cleaned out from excavations before backfilling.
- B. All filling, backfilling and rough grading shall be done within the area of the entire site.
- C. The filling or backfilling within the area of the building shall be done so that there will be no void spaces below floors and bottoms of pits and trenches, unless otherwise noted.

- D. Additional backfilling required to bring fill to the finished subgrades shown, shall be done by the Contractor only after the concrete walls and pier, against which the backfilling is done, have attained their full design strength, have been braced, if required by the Drawings and written permission of the Commissioner to backfill is obtained. If fill is required on both sides of a wall, it shall be brought up simultaneously and evenly on both sides.
- E. The Contractor shall do all filling necessary to bring the ground surfaces to the required levels for floors, pits, and areaways as shown on the drawings.
- F. Fill shall be properly compacted by mechanical tamping or other methods as accepted by the Commissioner to provide a solid bearing surface and prevent settlement. The Commissioner may reject materials and such material shall be disposed of at the Contractor's expense. All backfill shall be placed in loose lifts not exceeding 8 inches in height and compacted to at least 95% of the maximum dry density as determined by ASTM D1557, Modified Proctor Test.
- G. Should additional material be required for the placing of backfill, the Contractor shall obtain, deliver and place accepted backfill material as required.
- H. Sufficient suitable material shall be reserved and used to fill solid all space left by removal of temporary work, sheeting, shoring, or bracing. Backfilling shall not be performed until work has been inspected by the Commissioner. All shavings, wood, paper and deleterious materials shall be cleaned out from excavations before backfilling.
- I. Utility Backfill
  1. After pipe or conduit has been installed, bedded and tested as necessary, backfill trench to finish grade in 8 inch thick loose lifts of approved fill soils, compacting and testing each lift.
  2. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces. Should these conditions exist, the areas should be removed, replaced and re-compacted.
  3. Approved fill shall be compacted to at least 95% of the maximum dry density as determined by ASTM D-1557.
  4. Pipes, conduits and cables shall be protected against any damage that may occur due to compaction operations.
  5. No utility shall be backfilled until controlled inspections and field quality control have been performed in accordance with this section.

### 3.7 FIELD QUALITY CONTROL

- A. It is the intent of these specifications that the compacting equipment will produce in place, densities of at least 95% of the maximum density obtained by the Modified Proctor compaction procedure performed at optimum water content on the material

chosen as fill. The Commissioner will provide for testing of compaction at his own expense. If the results of such testing indicate the method of compaction should be modified to obtain the required densities, the Contractor shall adjust his procedures for fill placement accordingly at no additional cost to the Commissioner.

- B. Backfilling and Compaction: No fill shall be placed without inspection and approval of the Commissioner. All backfill and subgrade preparation shall be subject to quality control inspection, which shall be done by the Commissioner as required by the New York City Building Code.

### 3.8 CLEAN-UP

- A. All lumber, forms and metal work shall be removed, immediately after completion of local areas. The Contractor shall be responsible for removal of all his debris from the site.
- B. Sidewalk and streets adjoining the property shall be broom cleaned and free of debris, rubbish, trash and obstructions of any kind caused by the work of this Section.

### 3.9 MAINTENANCE GUARANTEE

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.
- C. Settling: Where settling is measurable or observable at excavated areas, remove surface (pavement, lawn, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

**END OF SECTION**

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## **SECTION 31 11 00 - SITE CLEARING, REMOVALS AND PREPARATION**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES:**

- A. Miscellaneous site clearing and removal of debris in preparation for site improvements.
- B. Protection of existing structures and utilities.
- C. Disconnection and capping or removal of identified utilities and in-service unidentified utilities encountered.
- D. Backfilling voids created as a result of removals to proposed subgrade elevation.

#### **1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 33 02 00 - Protection of Existing Utilities
- B. Section 31 00 00 - Earthwork
- C. Section 31 25 00 - Soil Erosion and Sediment Control
- D. Contract Drawings
- E. Geotechnical report prepared by Langan Engineering and Environmental Services, Inc, dated 08/24/2012.

#### **1.3 ENVIRONMENTAL REQUIREMENTS**

- A. Construct erosion control systems as shown on the plans or as directed by the Commissioner to protect adjacent properties and water resources from erosion and sedimentation.
- B. Clear and/or excavate in accordance with construction phasing indicated on the Contract Drawings.

#### **1.4 JOB CONDITIONS**

- A. Variations or discrepancies in actual site conditions at the commencement of work under this contract shall be brought to the attention of the Commissioner prior to the commencement of any site work.

### **PART 2 - PRODUCTS**

- 2.1 Not used

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Verify that construction phasing and clearing limits are clearly tagged, identified and marked.

#### 3.2 PROTECTION

- A. Locate and identify existing utilities that are to remain and protect them from damage as indicated on the Contract Drawings.
- B. Conduct operations with minimum interference to public or private access ways and facilities. Maintain access and egress at all times and clean or sweep any roadways daily or as required by the governing authority. At such times as deemed necessary by the Commissioner, dust control shall be provided in accordance with specification Section 31 25 00 – Soil Erosion and Sediment Control.
- C. Protect benchmarks, property corners and all other survey monuments from damage or displacement. If a marker needs to be removed it shall be referenced by a Registered Land Surveyor and replaced, as necessary, by the same at no cost to the Commissioner.
- D. Provide traffic control as required, in accordance with the U.S. Department of Transportation "Manual of Uniform Traffic Control Devices" and New York City Department of Transportation requirements.

#### 3.3 CLEARING AND REMOVAL

- A. Clear areas required for access to site and execution of work.
- B. Unless otherwise indicated on the drawings, improvements or obstructions interfering with installation of new construction shall be removed completely. Backfill shall be conducted with suitable on-site fill material or suitable imported material placed and compacted as per Section 31 00 00 - Earthwork.
- C. Existing utilities to be removed or abandoned shall be properly disconnected in accordance with the applicable utility. Contractor shall provide the utility and the Commissioner two week prior notice, in writing, before the work is to commence to schedule and coordinate disconnect of utility with other surrounding functions.
  - 1. Utilities indicated to be removed shall be removed completely including all pipe and structures foundations. Trenches shall be backfilled and compacted in accordance with the specifications or as directed by the Commissioner.
  - 2. Utilities indicated to be abandoned shall be left in place unless directed otherwise by the Commissioner.

#### 3.4 DISPOSAL OF MATERIALS

- A. No burning of any material, debris or trash on-site or off-site will be allowed.
- B. Transport site debris, rubbish and other materials with appropriate vehicles, and legally dispose of off-site to areas approved by governing authorities and the Commissioner.

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END OF SECTION 31 11 00

SITE CLEARING, REMOVALS, AND PREPARATION

31 11 00 - 3

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## **SECTION 31 25 00 – SOIL EROSION AND SEDIMENT CONTROL**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Implement all erosion and sediment control practices and procedures outlined in the Contract Documents.
- B. Provide all labor, materials, equipment and services to implement all erosion and sediment control practices and procedures as indicated on the Contract Documents.
- C. Inspect and maintain all erosion and sediment control practices weekly, prior to anticipated rainfall events, and after rainfall events. Needed repairs shall be made immediately.

#### **1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 31 11 00 – Site Clearing, Removals, and Preparation
- B. Section 31 00 00 – Earthwork
- C. Contract Drawings

#### **1.3 REFERENCES**

- A. New York State Department of Environmental Conservation (NYSDEC) Standards and Specifications for Erosion and Sediment Control, latest revision.
- B. United States Department of Environmental Protection Agency (EPA) Document No. EPA 832/R-92-005, "Storm Water Management for Construction Activities", Chapter 3, latest revision.
- C. New York City Building Code, latest revision.

#### **1.4 ENVIRONMENTAL REQUIREMENTS**

- A. The Contractor shall protect adjacent properties and water resources from erosion and sediment damage throughout construction in accordance with the NYSDEC standards.
- B. Discharge from dewatering operations shall not be directed to surface waters. Discharge from dewatering operations shall not be directed to public sewers without prior approval and receipt of discharge permit from New York City Department of Environmental Protection (NYCDEP)

1.5 SUBMITTALS

- A. Submittals shall include, but are not limited to the following for all erosion control products and seed mixes: shop drawings, cut sheets, installation instructions and manufacturer's specifications.
- B. All calculations and shop drawings shall be signed and sealed by a licensed Professional Engineer in the State of New York.

1.6 INSTALLER'S QUALIFICATION

- A. The installer performing the work of this Section shall be certified by the manufacturer for training and experience installing a given material.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Store materials in designated areas and as recommended by the manufacturer to protect against the elements, direct exposures, and damage.

1.8 WARRANTY

- A. Erosion control material shall have a warranty for use and durable condition for project specific installations
- B. Temporary erosion control materials shall carry a minimum eighteen (18) month warranty.
- C. Permanent erosion control materials shall carry a minimum three (3) year warranty.

PART 2 - PRODUCTS

2.1 SILT FENCE

- A. Silt fence posts: wood, steel, or an approved synthetic material, with a minimum length of three (3) feet. Hardwood posts shall have a minimum cross sectional area of three square inches. Steel posts shall be standard T and U sections weighing not less than 1.00 pounds per linear foot
- B. Silt fence fabric: Fabric shall be either Filter X, Mirafi 100X, Stablenka T140N, or approved equipment.
- C. Wire Fence: Minimum 12 ½ gage with a maximum 6-inch mesh opening.
- D. Prefabricated silt fence units" Mutual MISF 1776 or approved equal.

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2.2 STRAW BALE DIKE

- A. Hay or straw bales: New straw that shall be either wire bound or nylon string tied.
- B. Bale stakes: Rebar, steel pickets, or 2-inch x 2-inch hardwood stakes.

2.3 STABILIZED CONSTRUCTION ENTRANCE

- A. Stone size: Use 2" stone, or reclaimed or recycled concrete equivalent.
- B. Geotextile: Fabric to be either Trevira Spunbound 1135, Mirafi 600X or approved equivalent.

2.4 CURB DROP INLET PROTECTION

- A. Filter Fabric: Fabric shall have an equivalent opening size (EOS) of 40-85.
- B. Wooden Frame: 2-inch x 4-inch construction grade lumber.
- C. Wire Mesh: Continuous piece with 30-inch minimum width and length equal to four (4) feet longer than the throat per detail.
- D. Stone: Stone shall be 2-inches in size and clean.
- E. Weir: 2-inch x 4-inch construction grade lumber.
- F. Spacers: 2-inch x 4-inch construction grade lumber with length of nine (9) inches.
- G. Anchors: 2-inch x 4-inch construction grade lumber with length of two (2) feet.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Review site conditions and Contract Drawings prior to the commencement of earth moving activities or excavation.
- B. Construction Manager and/or Subcontractor shall notify the Commissioner prior to the commencement of work. Any propose deviation from the Contract Drawings must be submitted to the Commissioner in writing 72 hours prior to commencing work.
- C. Install erosion and sediment controls for each work area prior to commencement of work within that work area. Comply with all applicable NYSDEC standards and specifications.

### 3.2 SILT FENCE

- A. Locate silt fence at the toe of slopes and at ground level throughout its length. Drive posts securely at least 16-inches into the ground on the down slope of the trench. Set post spacing a maximum of ten (10) feet apart. Adjust spacing to place posts at low points along fence line.
- B. Fasten support wire fence to upslope side of posts, extending six inches below grade. Attach continuous length of fabric to upslope side of fence posts. Avoid joints, particularly at low points in the fence line. Fasten fabric securely to support posts where joints are necessary and overlap to the next post. Place the fabric in the trench so the bottom folds across the bottom of the trench.
- C. Inspect silt fences weekly and after each rainfall event. Remove any sediment deposits found promptly to provide adequate storage volume for the next rain and reduce pressure on the fence. Do not undermine the silt fence during clean out. replace fabric that is torn, decomposed, or in any way becomes ineffective, immediately without additional cost to the Owner.
- D. In addition to procedure summarized above, refer to installation and maintenance requirements outlined on the Contract Drawings.

### 3.3 STRAW BALE DIKE

- A. Excavate the area to accommodate placement of straw bales which are to be embedded in the soil a minimum of four inches, and placed so the string or wire is horizontal. Place bales in a row with ends tightly abutting the adjacent bale. Anchor the bales securely by driving two stakes or rebar through each bale to a minimum depth of 1.5 to 2 feet into the ground. Drive the first stake in each bale toward the previously laid bale to force the bales together. Drive stakes flush with the top of the bale.
- B. Inspect straw bales weekly and after each rainfall event, repair or replace promptly as needed. Remove accumulations of sediment trapped by straw bale filters regularly. Remove temporary straw bales from the site at the conclusion of construction. Restore the areas where the straw bales were installed to match the surrounding area. Restoration may include, but is not limited to, seeding and establishing the lawn area.
- C. In addition to procedure summarized above, refer to installation and maintenance requirements outlined on the Contract Drawings.

### 3.4 STABILIZED CONSTRUCTION ENTRANCE

- A. Install stabilized construction entrances at any point where traffic will be entering or leaving a construction site to or from a public-right-of way, street, alley, sidewalk, or parking area.
- B. Install and maintain a minimum stone thickness of 6-inches.

- C. The stabilized construction entrance width shall be twelve feet minimum but not less than the full width of points where ingress or egress occurs. The stabilized construction entrance shall be a minimum width of 24-feet if there is only one entrance to the site.
- D. The length of the stabilized construction entrance shall be 50-feet minimum.
- E. Place geotextile over the entire area to be covered with aggregate.
- F. Provide piping of surface water under entrance as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.
- G. Maintain the entrance in a condition which will prevent tracking of sediment onto public-right-of-way or streets. This may require periodic top dressing with additional aggregate. Remove all sediment spilled, dropped, or washed onto public right-of-way immediately.
- H. Clean wheels, when required, to remove sediment prior to entrance onto public-right-of-way. Perform washing, when required, on an area stabilized with aggregate, which drains into an approved sediment trapping device. Prevent all sediment from entering storm drains, ditches and watercourses.
- I. In addition to procedure summarized above, refer to installation and maintenance requirements outlined on the Contract Drawings.

### 3.5 CURB DROP INLET PROTECTION

- A. Install inlet protection at all curb catch basins located within the disturbed work area.
- B. Construct wooden frame as per the detail. Set spacers a maximum of six (6) feet apart. Securely nail the weir to the spacers.
- C. Shape and securely nail wire mesh to the weir. Wire mesh shall be a continuous piece with length of four (4) feet longer than the throat.
- D. Place the assembly against the inlet and secure with two (2) foot long anchors extending across the top of the inlet and held in place by sandbags or alternate weights. Install stone as per the detail.
- E. Construct the protective structure to extend two (2) feet beyond the inlet in both directions.
- F. Inspect the structure after every storm event. Remove any sediment and dispose of sediment on the site. Replace any missing stone. Check all materials for proper anchorage and secure as necessary.
- G. In addition to procedure summarized above, refer to installation and maintenance requirements outlined on the Contract Drawings.

### 3.6 EROSION CONTROL IMPLEMENTATION

- A. Place erosion control systems in accordance with the Contract Drawings.
- B. Follow construction phasing in the sediment control plans to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations.
- C. Incorporate all permanent erosion control features into the project at the earliest practical time to minimize the need for temporary controls.
- D. Properly construct, stabilize, and maintain all temporary and permanent erosion and sedimentation control measures and related items. Check all controls daily and after storm events to ensure they are in proper working order.
- E. Replace at own expense any control measure that is not functioning properly as directed by Commissioner or authorized regulatory personnel.
- F. Install inlet protection on all new catch basins immediately upon construction of catch basins.
- G. Implement dust control measures during construction. Minimize dust clouds by watering down construction area or other approved methods as required.
- H. Secure a tarp over materials in all construction vehicles hauling materials either into or out of the construction area to prevent sediment pollution of public roadways.
- I. Design erosion and sediment controls specific to the site in accordance with the NYSDEC Standards, which are more stringent than the EPA Standards.

### 3.7 NON-STORMWATER DISCHARGE CONTROLS

- A. Groundwater encountered within excavations and cleaning water for construction vehicles and equipment shall be diverted to the temporary and approved erosion and sediment control measures. Chemicals and detergents shall not be used.
- B. Coordinate with the Commissioner or Commissioner to identify areas on-site for construction vehicle transit (i.e. – haul roads, contractor trailers and parking areas, etc.) or equipment staging which shall be monitored and where runoff can be controlled.
- C. Water used for dust control measures shall be applied using appropriate quantities and equipment. No chemical additives shall be used.
- D. Water main flushings, hydrostatic test water, fire test water, and chlorination test water shall be directed to the control measures on the site. Turbid water is to be detained to allow sufficient sedimentation time (minimum of 24 hours). Chlorinated water is to be detained until the water is de-chlorinated (minimum of 24 hours).

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- E. Concrete trucks shall be washed out in an area approved of by the Commissioner or Owner's Representative. Designate wash-out areas with proper signage. Locate a concrete wash-out box near the concrete trucks to prevent concrete residue from being washed off-site. Wash-out containers can be pre-fabricated or constructed on-site out of plywood and plastic sheeting. All runoff from wash-out activities shall be directed to the on-site control measures. Discarded cementitious materials shall be removed and disposed off-site.
- F. Building washing or parking lot cleaning water (where no spills or leaks of toxic or hazardous materials have occurred) that may enter the storm drainage system shall not contain chemicals or detergents.

### 3.8 REMOVALS

- A. Maintain erosion and sediment control devices within each work area until final stabilization of that work area.
- B. "Final stabilization" shall mean that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire previous surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.
- C. Remove erosion and sediment control devices in accordance with the Contract Specifications for Construction Waste Management & Disposal.

END OF SECTION 31 25 00

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## **SECTION 32 05 16 - AGGREGATE MATERIALS**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Aggregate Materials used for site work elements

#### **1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 31 11 00 - Site Clearing, Removal and Preparation
- B. Section 31 00 00 – Earthwork
- C. Section 31 25 00 – Soil Erosion and Sediment Control
- D. Section 32 12 16 – Asphaltic Concrete Paving
- E. Section 33 41 13 – Storm Sewer Systems
- F. Section 33 31 00 – Sanitary Sewer Systems
- G. Construction Drawings

#### **1.3 REFERENCE STANDARDS**

- A. American Society for Testing and Materials (ASTM) latest edition.
  - ANSI/ASTM C136 Method for Sieve Analysis of Fine and Coarse Aggregates.
  - ANSI/ASTM D698 Test Methods for Moisture-Density Relations of Soils and Soil-aggregate Mixtures, Using 5.5 lb (2.49 Kg) Hammer and 12 inch (304.8 mm) Drop.
  - ANSI/ASTM D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Hammer and 18 inch (457 mm) Drop.
  - ASTM D2487 Classification of Soils for Engineering Purposes.
  - ASTM D3017 Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.
  - ASTM D4318 Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
  - AASHTO T191 Standard Method of Test for Density in-Place by Sand Cone Method.
- B. New York State Department of Transportation Standard Specifications for Construction and Materials.

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1.4 QUALITY ASSURANCE

- A. Tests and analysis of aggregate material will be performed in accordance with standard ASTM and AASHTO procedures listed herein.

1.5 SUBMITTALS

- A. Submit in air tight containers a 10 pound sample of each aggregate or mixture that is to be incorporated into the project with sieve and gradation analysis to the Commissioner for approval.
- B. Submit the name of each material supplier and specific type and source of each material. Any change in source throughout the job requires the prior approval of the Commissioner and/or Commissioner.
- C. Submit materials certificates to on-site field Commissioner. Certificates shall be signed by the material producer and Contractor, certifying that materials comply with, or exceed, the requirements within this section and the Remedial Action Plan for Gateway II Retail Center

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All construction and materials shall meet or exceed the requirements of this section plus applicable jurisdictional agency referred to or noted on the drawings which pertain to materials, preparation, and/or execution. All materials shall be as indicated on Drawings and shall comply with applicable specifications regarding source, quality, gradation, liquid limit, plasticity index, and mix proportioning.
- B. The following tables serve as guidance for the gradations of the various aggregate materials. Local availability and variances with each state's requirements may change the gradations and parameters of these materials. The Contractor shall indicate when submitting materials to be tested the application for which the material will be used.

Material Description	3" "	2- 1/2"	2"	1- 3/ 4"	1- 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#1 6	#50	#10 0
Large Stone Aggregate (AASHTO No. 3)		100	90-100		35-70	0-15		0-5						
Utility Trench Stone Bedding (AASHTO No. 57)					100	95-100		25-60		0-10	0-5			
Utility Trench Sand Bedding									100	94-100		3-29	0-29	0-10
Porous Embankment and Backfill			100			90-100		50-100	30-80	0-20	0-4			
Rip Rap			See Details											

Material Description	3/8"	#4	#8	#16	#40	#50	#100	#200
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Fill Sand	100	94-100		45-85		3-29	0-10	
Mason Sand			100			15-45	0-10	
Agriculture Lime	100	94-100	60-100	40-75		20-40	10-30	0-18

**PART 3 - EXECUTION**

**3.1 STOCKPILING**

- A. Stockpile materials on-site at locations indicated by the Owner, in such a manner that there will be no standing water or mixing with other materials.

**3.2 TRANSPORTATION**

- A. Off-site borrow materials shall be transported to the project using well maintained and operating vehicles. Once on the job site, all transporting vehicles shall stay on designated haul roads and shall at no time endanger any of the improvements by rutting, overloading or pumping the haul road.

END OF SECTION 32 05 16

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## **SECTION 32 12 16 – ASPHALTIC CONCRETE PAVING**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Standard and heavy duty asphaltic concrete paving; surface course, tack coat, base course, and subbase as shown on Construction Documents.

#### **1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 32 16 00 – Concrete Curbs and Sidewalks
- B. Construction Drawings
- C. New York State Department of Transportation Standard Specifications, Construction and Materials
- D. New York City Department of Transportation Bureau of Highway Operations Standard Specifications

#### **1.3 SUBMITTALS**

- A. **Design Mix:** Before any asphaltic concrete paving is constructed, submit actual design mix to the Commissioner for review and/or approval. Design mix submittal shall follow the format as indicated in the Asphalt Institute Manual MS-2, Marshall Stability Method; and shall include the type/name of the mix, gradation analysis, grade of asphalt cement used, Marshall Stability (lbs.), flow, effective asphalt content (percent), and direct references to the Standard Specifications sections for each material. The design shall be for a mixture listed in the current edition of the Standard Specification. Mix designs over three (3) years old will not be accepted by the Commissioner .
- B. **Material Certificates:** Submit materials certificate to the Commissioner 's Representative signed by material producer and Contractor, certifying that materials comply with, or exceed, the requirements herein.

#### **1.4 JOB CONDITIONS**

##### **A. Weather Limitations:**

1. Apply tack coat when ambient temperature is above 40°F, and when temperature has been above 35°F for 12 hours immediately prior to application. Do not apply when base is wet, contains excess moisture, or during rain.

2. Construct asphaltic concrete paving when atmospheric temperature is above 40°F.

## 1.5 REFERENCES

- A. MS-2 Mix design methods for asphaltic concrete and other hot mix types per The Asphalt Institute (AI).
- B. MS-3-Asphalt Plant Manual per The Asphalt Institute (AI)
- C. Hot Mix Asphalt Paving Handbook per US Army Corp of Engineers, UN-13 (CE MP-ET).
- D. MS-19 Basic Asphalt Emulsion Manual per The Asphalt Institute (AI)
- E. ASTM D946 – Penetration – Graded Asphalt Cement for use in Pavement Construction.
- F. ANSI/ASTM D1557 – Test Methods for Moisture – Density Relations of Soils and Soil-Aggregate Mixtures using 10 lb (4.54 Kg) Hammer and 18 inch (457 mm) Drop.
- G. ASTM D2922 – Test Methods for Density of Soil and Soil – Aggregate in Place by Nuclear Methods (Shallow Depth), Method B (Direct Transmission).
- H. ASTM D3017 – Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Provide asphalt-aggregate design mixture as shown on drawings. Use locally available materials and gradations, which meet the NYSDOT and NYCDOT Standard Specifications and exhibit satisfactory records of previous installations.
  - 1. Asphalt Concrete Base Course shall conform to NYSDOT Type 1 in accordance with NYSDOT Specifications Section 401.
  - 2. Asphalt Concrete Top Course shall conform to NYSDOT Type 6 in accordance with NYSDOT Specifications Section 401.
- B. Asphalt Cement: Comply with AASHTO M-226/ASTM D3381; Table 2 AC-10, AC-20, or AC-30, viscosity grade, depending on local mean annual air temperature. (See chart below):

Temperature Condition

Asphalt Grades

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Cold, mean annual air temperature degrees C (45 degrees) or lower	AC-10 85/100 pen.	at 7
Warm, mean annual air temperature between 7 degrees C (45 degrees F) degrees C(75 degrees F)	AC-20 60/70pen.	and 24
Hot, mean annual air temperature degrees C(75 degrees F) or higher	AC-30	at 24

- C. Tack Coat: Emulsified asphalt conforming to NYSDOT Specifications Section 407. The asphalt emulsion tack coat shall meet the requirements in NYSDOT Specifications Table 702-90.
- D. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with AASHTO M-17/ASTM D242, if recommended by applicable state highway standards.
- E. Subbase: Stone subbase course shall conform to NYSDOT Type 1 in accordance with the requirements of NYSDOT Section 304, Table 304-1. Recycled concrete aggregate meeting the requirements of the NYSDOT and NYCDOT Standard Specifications may be acceptable for use as subbase material subject to the approval by the Commissioner.

## 2.2 EQUIPMENT

- A. Maintain equipment in satisfactory operating condition and correct breakdowns in a manner that will not delay or be detrimental to progress of paving operations.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Sawcut existing pavement to produce a clean, straight edge for new work to meet.
- B. Verify that substrate has been inspected and that substrate is hard, uniform, stable, true to gradients and elevations, and dry prior to any subbase course construction.
- C. Proof roll prepared base material surface to check for areas requiring additional compaction and areas requiring removal and recompaction.
- D. Do not begin paving work until deficient base material areas have been corrected and are ready to receive paving.

### 3.2 APPLICATIONS

#### A. Subbase:

1. Perform subbase course construction in a manner that will allow the surface to drain properly at all times. Work shall be phased and sequenced to prevent runoff from adjacent areas from draining onto prepared subbase course construction.
2. Compact granular subbase material in 8-inch maximum loose lifts with a minimum of 6 passes of a 10 ton compactor, to not less than 95% of the optimum density as determined by ASTM D1557.

#### B. Tack Coat:

1. Apply to contact surfaces of previously constructed asphaltic concrete base courses or Portland cement concrete and surfaces abutting or projecting into asphaltic concrete or into asphaltic concrete pavement.
2. Apply tack coat to asphaltic concrete base course. Apply emulsified asphalt tack coat between each lift or layer of full depth asphaltic concrete and on surface of all such bases where asphaltic concrete paving will be constructed.
3. Apply emulsified asphalt tack coat in accordance with APWA Section 2204 and applicable State highway specifications.
4. Apply at minimum rate of 0.05 gallon per square yard of surface.
5. Allow to dry until in the proper condition to receive paving.

### 3.3 ASPHALTIC CONCRETE PLACEMENT

#### A. Place asphaltic concrete mixture on completed compacted subgrade surface, spread, and strike off. Spread mixture at following minimum temperatures:

1. When ambient temperature is between 40°F and 50°F, mixture temp. = 285°F
2. When ambient temperature is between 50°F and 60°F, mixture temp. = 280°F
3. When ambient temperature is higher than 60°F, mixture temp. = 275°F

#### B. All pavement shall be spread by a finishing machine; however, inaccessible or irregular shaped areas may be placed by hand methods. The hot mixture shall be spread uniformly to the required depth with hot shovels and rakes. After spreading, the hot mixture shall be carefully smoothed to remove all segregated course aggregate and rake marks. Rakes and lutes used for hand spreading shall be of the type designed for use on asphalt mixtures. Loads shall not be dumped faster than can be properly spread. Workers shall not stand on the loose mixture while spreading.



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- C. Paving Machine Placement: Apply successive lifts of asphaltic concrete in transverse directions with the surface course placed in the direction of surface-water flow. Place in typical strips not less than 10'-0" wide.
- D. Joints: Make joints between old and new pavements, or between successive days and work in a manner that will provide a continuous bond between adjoining work. Construction joints shall have same texture, density, and smoothness as other sections of asphaltic concrete course. Clean contact surfaces of all joints and apply tack coat..

### 3.4 ROLLING AND COMPACTION

- A. The mixture, after being spread, shall be thoroughly compacted by rolling as soon as it will bear the weight of the rollers without undue displacement. The number, weight, and types of rollers and sequences of rolling operations shall be such that the required density and surface are consistently attained while the mixture is in a workable condition.
- B. The asphalt concrete pavement shall have a minimum thickness as specified on the contract drawings and should be compacted to a minimum of 96% of the maximum unit weight as determined by the Marshall Mix Design Procedures in accordance with ASTM D-1559.
- C. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- D. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling with hot material.
- E. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.
- F. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.
- G. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot asphaltic concrete. Compact by rolling to maximum surface density and smoothness.
- H. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

### 3.5 FINAL QUALITY CONTROL

- A. Grade Control: Establish and maintain required lines and elevations.

- B. Temperature: The Commissioner 's Representative shall monitor the asphaltic concrete mixture on the paver immediately prior to spreading asphalt mixture to certify that the minimum temperature requirements of this section are met. Temperature measurement shall be taken on the average of one test per 20 tons of material.
- C. Thickness: In-place compacted thickness shall not be less than thickness specified on the drawings. Areas of deficient paving thickness shall receive a tack coat and a minimum 1" overlay; or shall be removed and replaced to the proper thickness, at the discretion of the Commissioner ; until specified thickness of the course is met or exceeded at no additional expense to the Commissioner .
- D. Surface Smoothness: The Contractor shall perform testing on the finished surface of each asphalt concrete course for smoothness, using 10'-0" straightedge applied parallel with, and at right angles to centerline of paved area. These tests shall be performed under the observation of the Commissioner 's Representative. Surfaces will not be acceptable if the following 10' straightedge tolerances for smoothness are exceeded.

Base Course Surface: 1/4"  
Wearing Course Surface: 3/16"

- E. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable paving as directed by Commissioner 's Representative.
- F. Compaction: The Commissioner 's Representative shall perform in place density tests as part of the construction testing requirements using the Nuclear Method in accordance with ASTM D-2922 Method B direct transmission. Field density tests shall be performed at the rate of one test per 20,000 square feet of pavement.
- G. Timing of work: The Commissioner may elect to place the asphalt base course at an earlier date than the wearing course. If the Commissioner elects to have the base course is left exposed for an extended period time, the contractor is to clean and inspect the base course prior to applying the tack coat. If damaged areas are discovered during cleaning and inspection, the damaged areas are to be removed and replaced before applying the tack coat and wearing course of asphalt.

END OF SECTION 32 12 16

## **SECTION 32 16 00 – CONCRETE CURB AND SIDEWALKS**

### **PART 1 - GENERAL**

#### **1.1 SCOPE OF WORK**

- A. Concrete Curb
- B. Concrete Sidewalk

#### **1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 31 00 00 – Earthwork
- B. Section 32 05 16 – Aggregate Materials.

#### **1.3 REFERENCE STANDARDS**

- A. ACI 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- B. ANSI/ASTM D1751 – Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.
- C. ANSI/ASTM D1752 – Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- D. ASTM C33 – Concrete Aggregates.
- E. ASTM C94 – Ready Mix Concrete.
- F. ASTM C150 – Portland Cement
- G. ASTM C260 – Air-Entraining Admixtures for Concrete.
- H. ASTM C309 – Liquid Membrane-Forming Compounds for Curing Concrete.
- I. ASTM C494 – Chemical Admixtures for Concrete.
- J. FS TT-C-800 – Curing Compound Concrete for New and Existing Surfaces.
- K. ANSI/ASTM A185 Welded Steel Wire Fabric for Concrete

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Contractor shall maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize temporary striping, flagmen, barricades, warning signs, and warning lights as required.

#### 1.5 QUALITY ASSURANCE

- A. The Contractor shall submit the required submittals to the Commissioner of the Commissioner's at least one week prior to the start of construction for approval.
- B. The Commissioner will retain an independent testing agency to perform the required test. The Contractor shall provide any necessary assistance to the testing agency and provide the testing agency with the intended construction schedule at least one week prior to the start of construction.
- C. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.
- D. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials.

### PART 2 - PRODUCTS

#### 2.1 Materials

- A. Forms: Steel, wood, or others suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. The forms shall be of a depth equal to the depth of curbing or sidewalk, and so designed as to permit secure fastening together at the tops. Coat forms with non-staining type coating that will not discolor or deface surface of concrete.
- B. Concrete Materials: Comply with requirements of applicable Section 03 30 00 for concrete materials, admixtures, bonding materials, curing materials, and others as required. Concrete shall have a minimum 28-day compressive strength of 4,000 psi.
- C. Joint Fillers: Resilient premolded bituminous impregnated fiberboard units complying with ASTM D1751 FS HH-F-341, Type II, Class A; or AASHTO M153, Type 1.
- D. Welded wire fabric as indicated on Contract Drawings.

#### 2.2 MIX DESIGN AND TESTING

- A. Concrete mix design and testing shall comply with requirements of applicable Section 03 30 00.

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- B. Design mix to produce normal weight concrete consisting of Portland cement, aggregate, water-reducing admixture, air-entraining admixture, and water to produce the following properties:
  - 1. Compressive Strength: 4,000 psi, minimum at 28 days, unless otherwise indicated on the Drawings.
  - 2. Slump Range: 3" maximum.
  - 3. Air Entrainment: 4% to 7%.

2.3 SUBMITTALS

- A. The Contractor shall submit required submittals at least two weeks prior to the start of construction for review and approval by the Commissioner.
- B. The submittal will include:
  - 1. Samples
  - 2. Shop Drawings
  - 3. Edging Samples
  - 4. Any other required submittals required in the related sections.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Proof-roll prepared base material surface to check for unstable areas. The paving work shall begin after any unsuitable areas have been corrected and are ready to receive paving. Compaction testing for the base material shall be completed prior to the placement of the paving.
- B. Surface Preparation: Remove loose material from compacted base material surface to produce a firm, smooth surface immediately before placing concrete.

3.2 INSTALLATION

- A. Form Construction
  - 1. Set forms to require grades and lines, rigidly braced and secured.
  - 2. Install sufficient quantity of forms to allow continuance of work and so that forms remain in place a minimum of 24 hours after concrete placement.

3. Check completed formwork for grade and alignment to following tolerances:
  - a) Top of forms not more than 1/8" in 10'-0".
  - b) Vertical face on longitudinal axis, not more than 1/4" in 10'-0".
4. Clean forms after each use, and coat with form release agent as often as required to ensure separation from concrete without damage.
5. Install 6"x6" welded wire fabric as indicated on Contract Drawings. Support wire on metal wire chairs to ensure that wire stays mid-depth of sidewalk section during concrete pour.

**B. Concrete Placement**

1. Comply with applicable requirements of Section 03 33 00.
2. Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Concrete shall not be placed around manholes or other structures until they are at the required finish elevation and alignment.
3. Place concrete using methods which prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocation of dowels, and joint devices.
4. Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2 hours, place construction joint. Automatic machine may be used for curb and gutter placement at Contractor's option. Machine placement must produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified.
5. Concrete placement shall be conducted between 45 degrees and 85 degrees Fahrenheit. Concrete placement in severe weather conditions must be preapproved by the Commissioner and shall be conducted in accordance with related ACI recommended procedures.

**C. Joint Construction**

1. Contraction Joints: Concrete curb, concrete gutter or concrete curb and gutter, where specified on the plans, shall be constructed in uniform sections of the length specified on the plans. The joints between sections shall be formed either by steel templates 1/8 inch in thickness, of a length equal to the width of the gutter and/or curb, and with a depth which will penetrate at least 2 inches below the surface of the curb and/or gutter; or with 3/4-inch thick preformed expansion joint filler cut to the exact cross section of the curb and/or gutter; or by sawing to a depth of at least 2 inches while the concrete is between 4 to 24 hours old. If steel templates are used they shall be removed while the forms are still in place.

2. Longitudinal Construction Joints: Concrete curb, concrete gutter or combination concrete curb and gutter, where specified on the plans, shall be tied to concrete pavement with  $\frac{1}{2}$  inch round deformed reinforcement bars of the length and spacing shown on the plans. Joint spacing as specified on the plans.
  3. Transverse Expansion Joints: Transverse expansion joint in curb, curb and gutter, gutter or sidewalk shall have the filler cut to the exact cross section of the curb, curb and gutter, gutter or sidewalk. The joints shall be similar to the type of expansion joint used in the adjacent pavement. Joint spacing as specified on the plans.
- D. Joint Fillers: Extend joint fillers full-width and depth of joint, and less than 2" or more than 1" below finished surface where joint sealer is indicated. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together.
- E. Joint Sealants: All joints shall be sealed with approved exterior pavement joint sealants and shall be installed per manufacturer's recommendations.
- F. Concrete Paver Solider Coarse: Lay masonry sand level, 2  $\frac{1}{2}$ " below concrete walk. Lay pavers perpendicular to walk, flush with each other. Place edging flush against pavers, securing it with steel stakes. Use plate compactor over pavers to level.

### 3.3 CONCRETE FINISHING

- A. After striking off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture. After floating, test surface for trueness with 10'-0" straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide continuous smooth finish.
- B. Work edges of sidewalks, gutters, back top edge of integral curb, and formed joints with an edging tool, and round to  $\frac{1}{2}$ " radius. Eliminate tool marks on concrete surface. After completion of floating and troweling when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:
1. Inclined Slab Surfaces: Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to line of traffic.
  2. Curbs, gutters, and sidewalks: Broom finish by drawing fine-hair broom across surface perpendicular to line of traffic. Repeat operation as necessary to produce a fine line texture.
- C. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed.
- D. Protect and cure finished concrete paving using acceptable moist-curing methods, more particularly described in the "water-curing" section of ACI 308-81.

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### 3.4 BACKFILL

- A. After the concrete has set sufficiently, the spaces in front and back of the curb and gutter, sidewalk or slab shall be backfilled to the required elevation with suitable material in accordance with Section 31 00 00, which shall be compacted until firm and solid and neatly graded.

### 3.5 CLEANING AND ADJUSTING

- A. Sweep concrete pavement and wash free of stains, discoloration, dirt and other foreign material just prior to final inspection.
- B. Protect concrete from damage until project is complete.

END OF SECTION 32 16 00



## **SECTION 32 90 00- LANDSCAPING**

### **PART 1 - GENERAL**

#### **1.01 SCOPE OF WORK**

- A. The Contractor shall furnish all materials and perform all work in accordance with these specifications, drawings, and instructions provided by the Commissioner's representative hereafter also referred to as Commissioner.
- B. The work shall include everything shown on the drawings and required by the specifications and everything to which in the judgment of the Commissioner is incidental to what is shown on the drawings or required by the specifications.

#### **1.02 RELATED SECTIONS AND DOCUMENTS**

- A. Construction Documents and Drawings
- B. Section 31 00 00 - Earthwork
- C. Section 31 11 00 – Site Clearing, Removals and Preparation
- D. Section 31 25 00 – Soil Erosion and Sediment Control
- E. Section 32 92 00 – Lawns and Grasses

#### **1.03 REFERENCES**

- A. Plant material shall in all cases conform with requirements of the American Standard for Nursery Stock latest versions of rules and grading adopted by the American Association of Nurserymen, Inc., but upgraded to meet the following additional requirements.

#### **1.04 QUALITY ASSURANCE**

- A. All work completed and materials furnished and installed shall be of the best quality and shall be in strict accordance with the intention of the drawings, specifications and samples. The Contractor shall cooperate with the Commissioner so that no error or discrepancy in the drawings or specifications shall cause defective or inappropriate materials to be used or poor workmanship to be allowed and so that the work may proceed in the most efficient and effective manner. If there is a discrepancy between the graphic count of plants and the plant list count of plants on the Landscape Plan, the graphic count shall govern.
- B. Work must be carried out only during weather conditions favorable to landscape construction and to the health and welfare of plants. The suitability of such weather conditions shall be determined by the Commissioner.

- C. Before commencing work, all trees and shrubs which are to be saved must be protected from damage by the placement of fencing flagged for visibility or some other suitable protective procedure consistent w/ tree protection measures on the plans and approved by the Commissioner 's Construction Manager. No work may begin until this requirement is fulfilled.
- D. In order to avoid damage to roots, bark or lower branches, no truck or other equipment shall be driven or parked within the drip line of any tree, unless the tree overspreads a paved way.
- E. The contractor shall use any and all precautionary measures when performing work around trees, walks, pavements, utilities, and any other features either existing or previously installed under this Contract.
- F. The Contractor shall adjust depth of earthwork and topsoiling when working immediately adjacent to any of the aforementioned features in order to prevent disturbing tree roots, undermining walks and pavements, and damage in general to any existing or newly incorporated item.
- G. Plants transported to the project in open vehicles shall be covered with tarpaulins or other suitable covers securely fastened to the body of the vehicle to prevent injury to the plants. Closed vehicles shall be adequately ventilated to prevent overheating of the plants. Evidence of inadequate protection following digging, carelessness while in transit, or improper handling or storage shall be cause for rejection. All plants shall be kept moist, fresh, and protected. Such protection shall encompass the entire period during which the plants are in transit, being handled, or are in temporary storage.
- H. Where excavating, fill, or grading is required within the branch spread of trees that are to remain, the work shall be performed as follows:
  - 1. TRENCHING: When trenching occurs around trees to remain, the tree roots shall not be cut but the trench shall be tunneled under or around the roots by careful hand digging and without injury to the roots.
  - 2. RAISING GRADES: When the existing grade at tree is below the new finished grade, and fill not exceeding 16 inches (16") is required, clean, washed gravel graded from one to two inches (1" - 2") in size shall be placed directly around the tree trunk. The gravel shall extend out from trunk on all sides a minimum of 18 inches (18") and finish approximately two inches (2") above the finished grade at tree. Install gravel before any earth fill is placed. New earth fill shall not be left in contact with the trunks of any trees requiring fill. Where fill exceeding 16 inches (16") is required, a dry laid tree well shall be constructed around the trunk of any tree to be preserved. The tree well shall extend out from the trunk on all sides a minimum of three feet (3') and to three inches (3") above finish grade or as indicated in the drawings. Coarse grade rock shall be placed directly around the tree well extending out to the drip line of the tree. Clean, washed gravel graded from one to two inches (1" - 2") in size shall be placed directly over the coarse rock to a depth of three inches (3"). Approved backfill/topsoil material shall be placed directly over the washed gravel to desired finished grade.

3. LOWERING GRADES: Existing trees in areas where the new finished grade is to be lowered shall have regrading work done by hand to elevation as indicated. Roots as required shall be cut cleanly three inches (3") below finished grade.
  4. Trees marked for preservation that are located more than six inches (6") above proposed grades shall stand on broad, rounded mounds and be graded smoothly into the lower level. Trees located more than 16 inches (16") above proposed grades shall have a dry laid stone wall, or other retaining structure as detailed on the plans, constructed a minimum of five feet (5') from the trunk. Exposed or broken roots shall be cut clean and covered with topsoil immediately to prevent desiccation.
- I. The Commissioner reserves the right to inspect and reject plants at any time and at any place, and reserves the right to inspect plants at the growing nursery.
  - J. The Commissioner shall have the final approval for acceptance of the landscape planting work.

#### 1.05 SAMPLES

- A. It is the responsibility of the Contractor, before ordering or purchasing materials, to provide samples of those materials to the Commissioner for approval, if so requested.
- B. The Contractor is to submit certification tags from trees, shrubs and miscellaneous materials verifying type, quality and purity.

#### 1.06 QUALITY OF PLANTS

- A. Plants shall in all cases conform with requirements of the American Standard for Nursery Stock latest versions of rules and grading adopted by the American Association of Nurserymen, Inc., but upgraded to meet the following additional requirements.
- B. Unless specifically noted otherwise, all plants shall be of selected specimen quality, exceptionally heavy, symmetrical, tightly knit, so trained or favored in their development and appearance as to be superior in form, number of branches, compactness and symmetry. All plants shall have a normal habit or sound, healthy, vigorous plants with well-developed root system.
- C. Plants shall be free of disease, insect pests, eggs or larvae.
- D. Plants shall not be pruned before delivery.
- E. Trees with abrasion of the bark, sunscalds, disfiguring knots or fresh cuts of limbs over one and one-fourth inches (1-1/4") which have not completely calloused shall be rejected.

- F. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. All plants shall have been grown under climatic conditions similar to those in the locality of the site of the project under construction or have been acclimated to such condition for at least two (2) years.
- G. The root system of each shall be well provided with fibrous roots. All parts shall be sound, healthy, vigorous, and well-branched.
- H. All plants designated ball and burlap (B&B) must be moved with the root systems as solid units with balls of earth firmly wrapped with burlap. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous root feeding systems necessary for the healthy development of the plant. No plant shall be accepted when the ball of earth surrounding its roots has been badly cracked or broken preparatory to or during the process of planting. The balls shall remain intact during all operations. All plants that cannot be planted at once must be heeled-in by setting in the ground and covering the balls with soil or mulch and then watering. Hemp burlap and twine is preferable to treated. If treated burlap or twine is used, all twine is to be cut from around trunk and all burlap is to be removed.
- I. The trunk of each tree specified as 'tree form' shall be a single trunk growing from a single unmutated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety.
- J. Plants shall be measured when branches are in their normal position.
- K. Caliper measurements shall be taken at a point on the trunk six inches (6") above natural ground line for trees up to four inches (4") in caliper, and at a point 12 inches (12") above the natural ground line for trees exceeding four inches (4") in caliper.
- L. If a range of size is given, no plant shall be less than the minimum size, and not less than 50% of the plants shall be as large as the upper half of the range specified.
- M. The measurements specified are the minimum size acceptable and, where pruning is required, are the measurements after pruning.

#### 1.07 MAINTENANCE OPERATIONS BEFORE APPROVAL

- A. Plant care shall begin immediately after each plant is satisfactorily installed and shall continue throughout the life of the contract until final acceptance of the project.
- B. Care shall include, but not be limited to, replacing mulch that has been displaced by erosion or other means, repairing and reshaping water rings or saucers, maintaining stakes and guys as originally installed, watering when needed or directed, and performing any other work required to keep the plants in a healthy condition.
- C. Contractor shall remove and replace all dead, defective and/or rejected plants as required before final acceptance.

1.08 NOTIFICATION OF DELIVERY

- A. Unless otherwise authorized by the Commissioner, the Contractor shall notify the Commissioner at least 48 hours in advance of the anticipated delivery date of any plant materials. A legible copy of the invoice, showing kinds and sizes of materials included for each shipment shall be furnished to the Commissioner.

1.09 GUARANTEE

- A. The condition of all new plant materials is the responsibility of the Contractor and shall be approved by the Commissioner.
- B. Until final approval, any replacement of plant materials that may be necessary shall be at the expense of the Contractor.
- C. In addition to other standard provisions, the Contractor's bid amount shall also provide for the following:
  - 1. Maintenance necessary during Establishment Period including provision of supplemental irrigation, through final acceptance.
  - 2. Replacement in kind, or with a substitute acceptable to the Commissioner, of all plant materials not in a healthy growing condition or that has died back to the crown or beyond normal pruning limits.
  - 3. The Contractor shall also be responsible for any damage caused by his operations and shall dispose of all rubbish and excess soil as directed.

**PART 2 PRODUCTS**

2.01 SHREDDED HARDWOOD BARK MULCH

Shredded hardwood bark mulch or approved equal shall be used as a four inch (4") top dressing in all plant beds and around all trees planted by landscape contractor. Single trees or shrubs shall be mulched to the outside edge of the saucer. Mulch shall be of sufficient character as not to be easily displaced by wind or water runoff.

## 2.02 STAKING MATERIALS

- A. Plant materials which satisfy the requirements of this specification should not require staking, however contractor shall install stakes if requested by the Commissioner.
- B. Stakes shall be 2" x 2" x 8' white oak pressure treated for stakes. Three (3) stakes per tree.
- C. Guy wire for tree staking shall be pliable No. 12 galvanized soft steel wire.
- D. Hose shall be two-ply fiber-bearing rubber garden hose, not less than one-half inch (1/2") inside diameter, black or green, and of suitable length.

## 2.03 WATER

On-site water shall be furnished by the Contractor. Hose and other watering equipment shall be furnished by the Contractor.

## PART 3 EXECUTION

### 3.01 PLANTING COORDINATION

- A. The Contractor shall inform the Commissioner of the date when the planting shall commence and of the anticipated delivery date of the material.
- B. Failure to notify the Commissioner in advance of order to arrange proper scheduling may result in loss of time or rejection of a plant or plants not installed as specified or directed.

### 3.02 DIGGING AND HANDLING

- A. Balled and burlapped plants shall be dug with firm natural balls of earth of sufficient diameter and depth to include most of the fibrous roots.
- B. Roots or balls of all plants shall be adequately protected at all times from the sun and from drying winds.
- C. All balled and burlapped plants which cannot be planted immediately upon delivery shall be set on the ground in a shady location and shall be well protected with soil, wet mulch or other acceptable material. Plant material shall be kept moist with periodic watering with fresh clean water. All shall be kept moist. At no time shall plants be staged in direct sun or on asphalt surfaces.

### 3.03 TREES AND SHRUB PLANTING OPERATIONS

- A. Planting operations shall be performed at a steady rate of work unless weather

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conditions make it impossible to work. No plant material shall be planted in frozen ground.

- B. The Contractor shall provide sufficient tools and equipment required to carry out the planting operation.
- C. All plants too large for two men to lift in and out of holes shall be placed with a sling. Do not rock trees in holes to raise.
- D. If rock or other underground obstruction is encountered, the Commissioner may require plant pits to be relocated, the pits enlarged or the plants deleted from the contract.
- E. Locations containing unsuitable subsoil shall be treated in one of the following manners:
  - 1. Where unsuitability within the construction site is deemed by the Commissioner to be due to excessive compaction caused by heavy equipment or by the presence of boards, mortar, concrete or other construction materials in sub-grade, and where the natural subsoil is other than A.A.S.T.H.O. classification of A6 or 7, the Contractor shall loosen such areas with spikes, discing, or other means to loosen the soil to a condition acceptable by the Commissioner. The Contractor shall also remove all debris and objectional material. Soil should be loosened to a minimal depth of 12 inches (12") with additional loosening as required to obtain adequate drainage. Contractor may introduce sand or organic matter into the subsoil to obtain adequate drainage as directed by the Commissioner. All such remedial measures shall be considered as incidental to the work and no extra payment shall be made for this part of the work.
  - 2. Where sub-grade is deemed by the Commissioner to be unsuitable because the natural subsoil falls into an A.A.S.T.H.O. classification of A6 or 7 and contains moisture in excess of 30%, then such a condition shall be rendered suitable by installation of a sub-drainage system or by other means described elsewhere in these specifications. Where such conditions have not been known or revealed prior to planting time and where they have not been recognized in the preparation of plans and specifications, then the Commissioner shall issue a change order to install the proper remedial measures, all of which shall be in addition to the contract sum.
- F. Adjustments in locations of planting beds and bed outlines shall be made as directed. In the event that pits or areas for planting are prepared and backfilled with topsoil to grade prior to commencement of lawn operations, they shall be so marked that when the work of planting proceeds, they can be readily located. In case underground obstructions such as ledges or utilities are encountered, location shall be changed under the direction of the Commissioner without charge, to the Commissioner.
- G. Holes for trees shall be at least two and one-half times (2.5Xs) greater in diameter than the diameter of the root ball and of a depth that allows the tree to sit at the same elevation as grows in the nursery. Holes for shrubs and vines shall be at least 12

inches (12") greater in diameter than the spread of the root system and of a depth that allows the shrub and vines to sit at the same elevation as grown in the nursery.

- H. To the topsoil in the backfilling of tree holes and shrub beds, there shall be added as the progress of the work permits, ground limestone if soil tests indicate it is needed and with prior approval by Commissioner, and commercial fertilizer at the rate of three (3) pounds for tree up to three inches (3") in caliper, one (1) pound per one inch (1") in caliper for larger trees, six (6) ounces for small shrubs and eight (8) ounces for each shrub four feet (4') or over. Ground limestone shall be omitted in the case of acid soil plants. The limestone and fertilizer shall be thoroughly mixed with the topsoil in the planting operation.
- I. The plants shall be planted in the center of the holes and at the same depth as they previously grew. Topsoil shall be backfilled in layers of not more than eight inches (8") and each layer watered sufficiently to settle before the next layer is put in place. Topsoil shall be tamped under edges of balled plants. Enough topsoil shall be used to bring the surfaces to finish grade when settled.
  - 1. A saucer shall be provided around each plant as shown on the drawings.
  - 2. Plants shall be soaked with water twice within the first twenty-four (24) hours of time of planting. Water shall be applied with low pressure so as to soak in thoroughly without dislodging the topsoil.
  - 3. A three-inch (3") layer (after settlement) of mulch or approved equal shall be applied directly on to the entire area of each saucer or planting bed.

### 3.04 MAINTENANCE DURING CONSTRUCTION

- A. Maintenance shall begin immediately after planting. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated, and otherwise maintained and protected until provisional acceptance. Settled plants shall be reset to proper grade and position, planting saucer restored and dead material removed. Stakes and wires shall be tightened and repaired. Defective work shall be corrected as soon as possible after it becomes apparent and weather and season permit.
- B. If a substantial number of plants are sickly or dead at the time of inspection, acceptance shall not be granted and the Contractor's responsibility for maintenance of all plants shall be extended until replacements are made or existing plants are deemed acceptable by the Commissioner.
- C. All replacements shall be plants of the same kind and size specified on the Plant List. They shall be furnished and planted as specified above. The cost shall be borne by the Contractor. Replacements resulting from removal, loss, or damage due to occupancy of the project in any part, vandalism, physical damage by animals, vehicles, etc., and losses due to curtailment of water by local authorities shall be approved and paid for by the Commissioner .
- D. Plants shall be guaranteed for a period of two (2) years after inspection and provisional acceptance.



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- E. Plants shall be installed during the approved New York City Department of Parks and Recreation planting seasons from October 1<sup>st</sup> through December 31<sup>st</sup> and March 1<sup>st</sup> through May 31<sup>st</sup>.
- F. At the end of the Establishment Period, inspection shall be made again. Any plant required under this contract that is dead or unsatisfactory to the Commissioner or Commissioner shall be removed from the site. These shall be replaced during the normal planting season.

**END OF SECTION 32 90 00**

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## **SECTION 32 92 00 - LAWNS AND GRASSES**

### **PART 1 - GENERAL**

#### **1.01 DESCRIPTION**

- A. General: Provide lawns and sod in accordance with the contract documents.
- B. Related Work Specified Elsewhere:
  - 1. Section 31 25 00 - Soil Erosion and Sediment Control
  - 2. Section 32 90 00 - Landscape

#### **1.02 REFERENCES**

- A. Hortus III - 1976 Edition, Bailey Horatorium, Cornell University.
- B. Technical Association of the Pulp and Paper Industry for Wood Cellulose.
- C. Contract Drawings and Documents

#### **1.03 EXAMINATION OF SITE AND DOCUMENTS**

- A. By submitting a bid the Contractor affirms that he has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.
- B. Plans, specifications, surveys, measurements, other documents and dimensions under which the work is to be performed are believed to be correct; but the Contractor shall have examined them for himself during the Bidding period, as no additional compensation will be made for errors for inaccuracies that may be found therein.

#### **1.04 SUBMITTALS TO COMMISSIONER**

- A. Product Data: Manufacturer's current catalog cuts and specifications of the following:
  - 1. Fertilizer
  - 2. Mulch
- B. Certificates:
  - 1. Certificates of inspection as required by law for transportation of each shipment of seed and sod along with invoice.
  - 2. Seed mix certificate including fertilizer and rate of application.

1.05 FIELD QUALITY CONTROL

- A. Tests: Samples of materials may be taken and tested for conformity to Specifications at any time.
- B. Rejected Materials: Remove rejected materials immediately from the site at contractor's expense. Pay cost of testing of materials not meeting Specifications.

1.06 DELIVERY, STORAGE AND HANDLING

A. Seed:

- 1. Delivery: Furnish standard seed in unopened manufacturer's standard containers bearing quantity, analysis and name of manufacturer
- 2. Storage: Store seed with protection from weather, rodents or other conditions, which would damage or impair the effectiveness of the product.

B. Sod:

- 1. Harvest and Delivery: Harvest from the source and deliver to project site within 24 hours. Deliver only as much sod as can be installed in one day's work.
- 2. Review: Sod not transplanted within this time period shall be reviewed prior to installation.

C. Mulch:

- 1. Labeling: Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content.
- 2. Storage: Store seed with protection from weather, rodents or other conditions, which would damage or impair the effectiveness of the product.

1.07 PROJECT/SITE CONDITIONS

- A. Existing Conditions: Refer to Construction Documents for additional information.

1.08 SEQUENCING AND SCHEDULING

A. Period of Application of Hydroseeding:

- 1. Irrigated Areas: Within fourteen (14) calendar days after the completion of finish grading in any area.

B. Scheduling:

- 1. Hydroseeding: Perform on a section-by-section basis, upon approval of Commissioner, and immediately after finish grading and irrigation installation except for seasonal Limitations.
  - a. Season: Plant in Fall or Spring.
    - 1) Allow sufficient time for full germination and 2 mowings before preliminary acceptance.

2. Embankment and Slopes: Complete in a continuous manner.
3. Acceptable Planting Window:

Place grass seed or sod only at seasonal times within appropriate temperature range and wind conditions for plant development as approved by Commissioner:

a. Acceptable Seeding Seasons/Times:

- 1) Spring: April 1st - June 15th
- 2) Fall: September 1st - October 15<sup>th</sup>

- b. Seeding or sodding at any time other than within the above seasons shall be allowed only when the Contractor submits a written request for permission to do so and permission is granted in writing by the Commissioner. Newly seeded or sodded areas, if installed out of season, must be continuously watered according to best recommended and Commissioner approved practice. Contractor shall be responsible for providing an acceptable stand of grass as specified.

1.09 WARRANTY

- A. The 90 day maintenance period begins with the Commissioners certification of substantial completion. The warranty period begins after the final acceptance of the maintenance period. The final acceptance occurs upon satisfactory completion of all work, included in the 90 day maintenance period, but exclusive of replacement of materials under the Warranty Period.
- B. Time Period: Warrant that lawns and sod shall be in a healthy and flourishing condition of active growth one (1) year from date.
- C. Appearance During Warranty: Lawns and sod shall be free of dead or dying patches, and all areas shall show foliage of a normal density, size and color.
- D. Delays: Delays caused by the Contractor in completing planting operations, which extend the planting into more than one planting season, shall extend the Warranty Period correspondingly.
- E. Coverage: Warrant growth and coverage of hydroseeded planting to the effect that a minimum of 95% shall be covered with specified planting after one growing season with no bare spots.
- F. Exceptions: Contractor shall not be held responsible for failures due to neglect by Commissioner, vandalism, etc., during Warranty Period. Report such conditions in writing.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS/GROWERS

- A. Lawn Sod: Obtain sod from a certified source within proximity of the project site and of a variety which will thrive under local conditions.
- B. Hydro Mulch and Soil Stabilizer: Obtain mulch and soil stabilizer from a certified source within proximity of the project site.
- C. Fertilizer:
  - 1. Regular Type: Nitrogen content derived from organic sources; bearing manufacturer's statement of analysis. Minimum requirements: 12% nitrogen, 4% phosphoric acid, 8% potash.
  - 2. Slow-release Type: 50% of nitrogen is in slow-release form. Content derived from organic or inorganic sources; bearing manufacturer's statement of analysis. Minimum requirements: 12% nitrogen, 4% phosphoric acid, 8% potash.
  - 3. Commercial Mixed Type: Nitrogen content derived from organic or inorganic sources, bearing manufacturer's statement of analysis. Minimum requirements: 10% nitrogen, 10% phosphoric acid, 10% potash.
- D. Lime: Ground limestone containing not less than 85% carbonates; 50% passing 100 mesh sieve and 90% passing 20 mesh sieve.
- E. Seed: Shall be of a mix as specified on the plans furnished in un-opened containers and providing percentage of seed varieties and inert matter. All non-turf seeds shall be purchased and applied at a Pure Live Seed (PLS) rate as indicated on the plans. This may require the contractor to purchase/apply seed at a high rate as measured by bulk weight.
- F. Straw Bales: Clean bales of straw of hay, wheat, rye, oats or barley.
- G. Hydromulch: Wood cellulose fiber containing no germination inhibiting or growth inhibiting agents. Characteristics shall be as follows:
  - 1. Percent moisture content: 9.0% (+3.0%)
  - 2. Percent organic matter: 99.2% (+0.8).
  - 3. Percent ash content: 0.8% (+0.2%).
  - 4. pH: 4.8 (+0.5).
  - 5. Water Holding Capacity: 1150 grams water/100 grams fiber, minimum.
- H. Mulch: Clean, seed free straw of hay, wheat, rye, oats or barley.
- I. Staking Pegs: 3/4" diameter by 8" long softwood.

- J. Water: Clean, potable.

## 2.02 ACCESSORIES

- A. Mulch: Shall be Product: "Silva Fiber", "X-100 Spra-mulch", or "Conwed".

1. Composition: Green-colored, fibrous, 100% virgin wood fibre mulch containing no growth or germination-inhibiting factors.
2. Weight: Weight specifications of this material from suppliers, and for all applications, shall refer only to air dry weight of the fiber material. Absolute air dry weight is based on the normal standards for wood cellulose and is considered equivalent to 10% moisture.
3. Dispersion in Slurry: Mulch shall be manufactured in such manner that after addition to and agitation in slurry tanks with fertilizer, seed, water and other approved additives, fibers in the material will become uniformly suspended to form a homogeneous slurry.
4. Absorption Capacity: When hydraulically sprayed on the ground, the material will form a blotter-like groundcover impregnated uniformly with seed, which will allow absorption of moisture and allow rainfall to percolate to the underlying soil.

## 2.03 HYDROSEED EQUIPMENT (if required)

- A. Type: Commercial type hydro-seeder for the application of slurry. Equipment shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend and homogeneously mix slurry.
- B. Distribution Lines: Large enough to prevent stoppage and to provide even distribution of the slurry over the ground.
- C. Pump Capacity: 150 psi at the nozzle.
- D. Slurry-Tank: Minimum capacity of 1,000 gallons and shall be mounted on a traveling unit which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded.

## 2.04 MIXES

- A. Hydroseeding Mix per (1,000 Sq. Ft.)
  1. Lawn Areas:
    - 30 lbs. - Mulch
    - 7 lbs. - Lawn Seed
    - 10 lbs. - Fertilizer

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verification of Conditions:

1. Stones, Weeds, Debris: Verify that all areas to receive hydroseeding and sodding are clear of stones larger than 1/2 in. diameter, weeds, debris and other extraneous materials.
2. Grades: Verify that grades are within 1 in. plus or minus of the required finished grades. Verify that fertilization have been installed in another section. Report all variations in writing.

### 3.02 PREPARATION

#### A. Soil Moisture:

1. Excessive Moisture: Do not commence work of this section when soil moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in air or that clods will not break readily.
2. Inadequate Moisture: Apply water, as necessary, to bring soil moisture content to an acceptable level.

### 3.03 HYDROSEEDED LAWN

#### A. Preparation: Do all slurry preparation at the job site.

1. Water: Add water to the tank when the engine is at half throttle. When the water level has reached the height of the agitator shaft, establish good re-circulation and add seed.
2. Seed: Do not allow seed to remain more than 30 min. in slurry.
3. Fertilizer: Add fertilizer, followed by the mulch. The mulch shall only be added to the mixture after the seed, and when the tank is at least 1/3 filled with water.
4. Mixing: Open the engine throttle to full speed when the tank is half-filled with water. Add all the mulch by the time the tank is 2/3 to 3/4 full. Commence spraying immediately when the tank is full.

#### B. Seed Bed Preparation:

1. Rolling: Roll amended soil with 200 pound water ballast roller and bring to finish grade.
2. Raking: Lightly rake seed bed surface to 1/4 in. depth. Seed immediately thereafter, provided the seed bed has remained in friable condition. Application:
  1. General: Apply specified slurry mix in a sweeping motion to form a uniform mat at the specified rate. Keep hydroseeding within designated areas and keep from contact with other plant materials.
  2. Unused Mix: Do not use a slurry mixture, which has not been applied within 4 hours of mixing. Promptly remove from the site.
  3. Protection: After application, do not operate any equipment over the hydroseeded areas.
  4. Reseeding: Reseed all areas and parts of areas, which fail to show a uniform stand of lawn until all areas are covered with strands of lawn.

### 3.04 SODDED LAWN INSTALLATION

#### A. Sod Bed Preparation:



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1. Rolling: Roll amended soil with 200 pound water ballast roller.
2. Moistening: After all unevenness in the soil surface has been corrected, lightly moisten the soil immediately prior to laying the sod.
3. Timing: Sod immediately thereafter, provided the sod bed has remained in friable condition.

B. Sodding Operations:

1. Starter Strip: Lay the first row of sod in a straight line, with subsequent rows parallel to and tightly against each other, with no spaces between strips. Stagger lateral joints. Do not stretch or overlap sod. Butt all joints tightly to eliminate all voids.
2. Cutting: Use a sharp knife to cut sod to fit curves and paving.
3. Tamping and Rolling: Thoroughly tamp and roll sod to make contact with sod bed. Roll each entire section of completed sod.
4. Watering: Thoroughly water sod immediately after installation to wet the underside of the new sod pad and the soil immediately below to a depth of 6 in.
5. Top-Dress Fertilizer: Apply at the rate of six (6) pounds per 1,000 square feet at 25 days and at 50 days after sodding.

3.05 CLEANING

- A. Hydrosseed Overspray: Immediately after application, thoroughly wash off any plant materials, planting areas, or paved areas not intended to receive slurry mix.
- B. Erosion: Immediately restore eroded areas. Keep all adjacent paved surfaces cleaned of dirt, mud or stains and organic debris.

**END OF SECTION 32 92 00**

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## **SECTION 33 02 00 – PROTECTION OF EXISTING UTILITIES**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Identification and field mark out of all on-site utility lines to remain in operation during construction.
- B. Submission of procedures to be used to ensure the safety and protection of the utility.
- C. Repair of any damage as a result of construction operations.

#### **1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 31 11 00 – Site Clearing, Removals and Preparation
- B. Section 31 00 00 – Earthwork

#### **1.3 PROJECT RECORD DOCUMENTS**

- A. A preconstruction and post construction survey of the condition of all utilities to remain in operation during construction shall be performed by the Commissioner.
- B. Accurately record actual locations of capped utilities and utility lines encountered during construction.

#### **1.4 REGULATORY REQUIREMENTS**

- A. Notify applicable utility company before starting work and comply with their requirements.

### **PART 2 - PRODUCTS**

#### **2.1 NOT APPLICABLE**

### **PART 3 - EXECUTION**

#### **3.1 IDENTIFICATION**

- A. Locate all existing electrical ducts and utilities which are to remain in service during construction.

**3.2 PROTECTION**

- A. Flag, barricade, sheet, brace or suitably protect existing utilities during construction operations and equipment movement.
- B. At a minimum, Contractor shall provide timber mats at locations where equipment will cross existing utilities. Provide other safety measures and follow additional procedures requested by the City of New York and/or utility company.

**3.3 LATERAL DISCONNECTION**

- A. Where a utility line is to be disconnected from portions to remain following construction, the lateral pipes shall be cut and suitably plugged/capped in accordance with the contract documents and applicable utility or agency regulations.

**3.4 REPAIRS**

- A. Any damage to existing, operational utilities by the Contractor or his subcontractors during the on-going construction operation shall be immediately repaired to operational standards at the contractor's expense. If the repairs are not immediately addressed by the contractor, the utility owner and/or the Commissioner will contract for the repair at the contractor's expense.
- B. Preconstruction and post construction condition surveys shall be conducted by the Commissioner. Any damage to the utilities shall be repaired to the condition identified in the preconstruction survey. The Commissioner and/or utility owner shall determine the acceptability of any repairs.

END OF SECTION 33 02 00

## **SECTION 33 11 16 – WATER DISTRIBUTION SYSTEM**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Furnish labor, materials, services, equipment, and other necessary items required for accompanying the construction of the water systems as indicated on the Contract Drawings.

#### **1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 33 02 00 – Protection of Existing Utilities
- B. Section 31 25 00 – Soil Erosion and Sediment Control.
- C. Section 31 00 00 – Earthwork
- D. Section 32 05 16 – Aggregate Materials

#### **1.3 REFERENCES**

- A. ANSI/ASME B16.18 – Cast Copper Alloy Solder Joint Pressure Fittings.
- B. ANSI/ASME B16.22 – Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- C. ASTM B88 – Seamless Copper Water Tube.
- D. ANSI/AWS A5.8 – Brazing Filler Metal.
- E. ANSI/AWWA C104 – Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
- F. ANSI/AWWA C105 – Polyethene Encasement for Ductile Iron Piping for Water and Other Liquids.
- G. ANSI/AWWA C111 – Rubber-Gasket Joints for Ductile Iron and Grey-Iron Pressure Pipe and Fittings.
- H. ANSI/AWWA C151 – Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
- I. ANSI/AWWA C500 – Gate Valves, 3 through 48 inches NPS, for Water and Sewage Systems.

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- J. ANSI/AWWA C502 – Dry Barrel Fire Hydrants.
- K. ANSI/AWWA C504 – Rubber Seated Butterfly Valves.
- L. ANSI/AWWA C508 – Swing-Check Valves for Waterworks Service, 2 inches through 24 inches NPS.
- M. ANSI/AWWA C509 – Resilient Seated Gate Valves 3 inches through 12 inches NPS, for Water and Sewage Systems.
- N. ANSI/AWWA C600 – Installation of Ductile-Iron Water Mains and Appurtenances.
- O. ANSI/AWWA C606 – Grooved and Shouldered Type Joints.
- P. UL 246 – Hydrants for Fire – Protection Service.
- Q. Rules of the City of New York, Title 15, Chapter 20, Rules Governing and Restricting the Use and Supply of Water

1.4 SUBMITTALS

- A. Product Data: Provide data on pipe materials, pipe fittings, hydrants, valves, and accessories.
- B. Manufacturer's Certificate: Certify that products meet or exceed state and local requirements.

1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of piping mains, valves, connections, and invert elevations.
- B. Identify and describe unexpected variations to subsoil conditions and discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with utility company and municipality requirements.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.

1.7 DEFINITIONS

- A. Bedding: Fill placed under, beside, around, and above pipe, prior to subsequent backfill operations.

## PART 2 - PRODUCTS

### 2.1 WATER PIPE

- A. Ductile Iron Pipe: Cement-Lined, ANSI A21.10 (AWWA C-151) (Class 56):
  - 1. Fittings: Ductile iron, standard thickness.
  - 2. Joints: AWWA C151, mechanical joints.
  - 3. Cement mortar lining: AWWA C-104.
  - 4. Filter fabric bedding wrap: Mirafi 500x or approved equivalent.
- B. Copper tubing: Rigid hard temper Type "k" copper tubing, ASTM No. B88:
  - 1. Fittings: Wrought copper and bronze solder.
  - 2. Joints: "flared" type 95-5 tin antimony solder.

### 2.2 GATE VALVES

- A. Manually operated, inside non-rising stem, ductile iron body/bonnet/seal plate, non-packing, bronze seated, double disc, seating wedge mechanism gate valve; model and manufacturer as approved by the NYCDEP Bureau of Water and Sewer.

### 2.3 ACCESSORIES

- A. Concrete for Thrust Blocks: Place thrust blocking consisting of 2,500 psi concrete to provide sufficient bearing area to transmit unbalanced thrust from bends, tees, caps, or plugs to undisturbed soil without loading undisturbed soil in excess of 2,500 lbs/sq. ft. when water main pressure is 100 psi.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify existing conditions.
- B. Verify building service connection points with architectural plans.
- C. Verify that existing water main size, location, and invert are as indicated on the drawings.

### 3.2 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

### 3.3 BEDDING

- A. Excavate pipe trench in accordance with Section 31 00 00.
- B. Form and place concrete for pipe thrust restraints at any change of pipe direction.
- C. Place bedding material at trench bottom.
- D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent of the optimum dry density as determined by ASTM D 1557 at a water content not less than 1% below or 3% above optimum.

### 3.4 INSTALLATION – PIPE

- A. Maintain separation of water main from sanitary and storm sewer piping in accordance with state and local code. Unless otherwise approved, water mains shall be separated from sanitary sewer pipes a minimum clear distance of 10 feet horizontal and 18 inches vertical.
- B. Install ductile iron piping and fittings to ANSI/AWWA C600.
- C. Route pipe in straight line.
- D. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- E. Install access fittings to permit disinfection of water system performed under this section.
- F. Slope water pipe and position drains at low points.
- G. Form and place concrete for thrust restraints at each elbow or change of direction of pipe main.
- H. Establish elevations of buried piping to ensure not less than 4 ft of cover over the top of pipe under proposed grading.
- I. Backfill trench in accordance with Section 31 00 00.
- J. Connections with Existing Pipelines: Where connections are made between new work and existing piping, make connection using suitable fittings for conditions encountered.



Make each on-site wet tap connection under conditions which least interfere with operation of existing pipeline per service connection approval from the NYC DOB. NYCDEP will install wet tap to their mains in the city streets per the NYCDEP approved Internal Water Main plan.

### 3.5 INSTALLATION - VALVES

- A. Install gate valves as indicated on Drawings, supported on concrete pads with the valve stem vertical. Install valve boxes in a manner that will not transmit loads, stress, or shock to valve body. Center valve box over operating nut valve vertical and plumb. Securely fit valve box together leaving cover flush with finished grade.

### 3.6 DISINFECTION OF WATER PIPING SYSTEM

- A. Sterilize distribution system with a solution of not less than 50 parts per million of chlorine with water prior to domestic operation. Thoroughly flush lines before introduction of chlorinating materials and after the contact period of at least 24 hours. Dechlorinate water prior to flushing into storm sewer system.
- B. Open and close valves in lines being sterilized several times during contact period. System shall be flushed with clean water until residual chlorine content is less than 1.0 part per million.
- C. After sterilization, test water for bacterium in accordance with AWWA specifications. Do not place distribution system in service until approval is obtained from applicable governing authorities.

### 3.7 SERVICE CONNECTIONS

- A. Construct water service lines to within 5 feet of the building entry point.

### 3.8 FIELD QUALITY CONTROL

- A. Test water distribution system installed below grade and outside the building in accordance with following procedures:
  1. All pipework shall be tested at a hydrostatic pressure equal to 150 psi. The pipe work shall maintain said pressure for not less than two hours.
  2. Furnish, install, and operate the necessary connections, pumps, meters, and gauges. Leakage shall not exceed that permitted by AWWA Specifications C600-64 for mechanical joint and push-on joint pipe. Prior to running any field test, a meter shall be tested, sealed, and approved by applicable governing authority at Contractor's expense.
  3. Locate and repair any leaks. Repeat testing until process results are satisfactory and in compliance with this section.

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4. Furnish a copy of the results of the meter test and the hydrostatic pressure test to the Commissioner upon completion of water distribution system backfilling operations.
- 
- B. Inspections and as-built information to be provided per the Rules of the City of New York Title 15, Chapter 20, Rules Governing and Restricting the Use and Supply of Water.

END OF SECTION 33 11 16

## **SECTION 33 31 00 - SANITARY SEWER SYSTEM**

### **PART 1 - GENERAL**

#### **1.01 SECTION INCLUDES**

1. Sanitary Sewerage piping, fitting and accessories and bedding.
2. Sanitary sewer manholes and connection to New York City Sewers.

#### **1.02 RELATED SECTIONS AND DOCUMENTS**

- A. Section 31 00 00 – Earthwork
- B. Construction Drawings
- C. New York City Department of Environmental Protection Bureau of Water and Sewer rules and specifications.
- D. New York City Department of Buildings rules, regulations and building codes.

#### **1.03 REFERENCES**

- A. ANSI C150/AWWA A21.50 - Ductile Iron Pipe (DIP) Class 56, Cement-Lined Tyton Joints.
- B. ANSI C151/AWWA A21.51 - Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
- C. ANSI C111/ANSI A21.11 - Rubber Gasket Joint Seals.
- D. ANSI/ASTM C76 - Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
- E. ANSI/ASTM C443 - Joints for Circular Concrete Sewer and Culvert Pipe, using Rubber Gaskets.

#### **1.04 SUBMITTALS**

- A. Product Data: Provide catalog materials indicating pipe, pipe accessories, and fittings.
- B. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- C. Manufacturer's Certificate: Certify that products meet or exceed ANSI/ASTM or AWWA designations.

#### **1.05 COORDINATION**

- A. Coordinate the Work with the building sanitary sewer connection point shown by the architectural plans, and connection to the New York City sewers.

#### **1.06 PROJECT RECORD DOCUMENTS**

- A. Accurately record actual locations of pipe runs, connections, outlet structures, headwalls, and invert elevations.

- B. Identify and describe unexpected variations to subsoil conditions and the discovery of uncharted utilities.

## PART 2 - PRODUCTS

### 2.01 SEWER PIPE MATERIALS

- A. Ductile Iron Pipe
  - 1. ANSI C150/AWWA A21.50 - Ductile Iron Pipe (DIP) Class 56, Cement-Lined Tyton Joints.
  - 2. ANSI C111/ANSI A21.11 - Rubber Gasket Joint Seals.

### 2.02 PIPE ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

### 2.03 CLEANOUTS

- A. Lid and Frame: Heavy Duty cast iron construction, manufactured by Campbell Foundry or approved equal. Closed Locking Lid Design.
- B. Shaft Construction: Cast Iron shaft of internal diameter as specified on plans with 2500 psi concrete collar for cleanouts located in paved areas, every 50 feet on center.
- C. Base Pad: Cast-in-place concrete, 2500 psi leveled top surface to receive cast iron shaft sections, sleeved to receive sanitary sewer pipe sections.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Hand trim excavations to required elevations.
- B. Remove large stones or other hard matter, which could damage pipe or impede consistent backfilling or compaction.

### 3.02 BEDDING

- A. Excavate pipe trench in accordance with Section 31 00 00 for work of this Section.
- B. Place and compact bedding material at trench bottom. Hand trim bedding for accurate placement of pipe to elevations indicated.
- C. Maintain moisture content of bedding material between 1% below and 3% above optimum during compaction.

3.03 INSTALLATION - PIPE

- A. Install pipe, fittings, and accessories in accordance with ANSI/ASTM or AWWA requirements and/or manufacturer's instructions. Seal joints watertight.
- B. Lay pipe to slope gradients noted on Contract Drawings.
- C. Lay pipe beginning at low point of system, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream.
- D. Place bedding at sides and to the springline of the pipe in maximum compacted lift thicknesses of 12 inches.
- E. Refer to Section 31 00 00 for trenching requirements. Do not displace or damage pipe when compacting.

3.04 INSTALLATION - CLEANOUTS

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Form and place cast-in-place concrete collar, with provision for sanitary sewer pipe end sections.
- C. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.05 INTERFACE WITH EXISTING FACILITIES

- A. Compliance With Facility Commissioner Requirements: Connections made into existing facilities shall be performed in accordance with the requirements of the utility Owner. The Contractor will be required to comply with all such requirements, including securing of all required permits, and paying the costs thereof. The cost of making the connections in accordance with the requirements of the Owner of the existing facility shall be included in the Contract Sum.

3.06 CONSTRUCTION WITHIN THE PUBLIC R.O.W.

Construction within the public right-of-way shall conform to all requirements of the City of New York and any other agency having jurisdiction.

3.07 MODIFICATIONS OF EXISTING STRUCTURES

- A. General: The Contractor shall alter, reconstruct and/or convert existing structures where and as shown on the Drawings, and/or as approved by the Commissioner. In general, alterations shall be performed with the same type of material used in the original construction unless otherwise indicated on the Drawings or approved by the Commissioner.
- B. Damage to Existing Installations: The Contractor shall exercise extreme care during such alteration, reconstruction and/or conversions so as not to damage any portions of the structure and/or pipe shown to remain. Any such damage shall be repaired by the Contractor at his own expense and to the satisfaction of the Commissioner.

3.08 LATERALS

- A. General: The Contractor shall make all required lateral connections from the building to the on-site sewer system as shown on the Drawings and/or approved by the Commissioner. Work shall include making the connections into the on-site system, furnishing and installing all lateral pipe from the on-site sanitary sewer system to points located five (5) feet outside of the proposed building lines and properly sealing the ends with watertight plugs.
- B. Coordination With Building Contractor: The Contractor will be required to coordinate his work with the work of the Building Contractor to determine the exact location and elevation of the point of entry into the building. If the Building Contractor has installed his portion of the leader drain. Work under this Contract shall also include final connections of the leader drain five (5) feet outside the building line to the building leader drains at no additional cost to the Commissioner .

### 3.09 FIELD QUALITY CONTROL

- A. Backfill placement and quality control will be performed in accordance with Section 31 00 00.
- B. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Commissioner.
- C. Inspection and Testing - The Contractor shall cooperate with the Commissioner as required to facilitate testing and inspection of the work. The Contractor shall clean and "Lamp" the lines in the presence of the Commissioner before final acceptance of the work. Infiltration and Exfiltration Testing shall be determined by the Commissioner and shall meet all local agency regulations.

The complete sanitary sewer system, including all mains, lateral sewers and manholes shall be tested for both infiltration and exfiltration. Contractor shall provide all materials equipment and services as necessary to perform the tests as described herein except as noted.

Infiltration Testing - Rate of infiltration shall be determined by means of V-notch weirs or other approved measuring devices in an approved manner and at such times and locations as may be directed by the Commissioner. The maximum leakage limit shall be 100 gallons per inch of diameter, per day, per mile.

For shorter stretches, less than 500 feet in length, rate of 100 percent in total excess of the above figures may be permitted, providing the total infiltration is in excess of the maximum allowable, the leaking joints shall be re-laid if necessary, or other remedial construction shall be performed by and at the expense of the Contractor. The section of sewer shall then be retested after repairs are completed to determine compliance with the specifications. All tests shall be made in the presence of the Contractor and the Commissioner. The costs for these tests shall be included in the unit price bid for installing the pipe.

Low Pressure Air Exfiltration Testing - The sewer mains and/or laterals shall be tested for leakage by the use of low-pressure air as specified hereinafter and as approved by the Commissioner. The Contractor shall furnish test plugs, air compressor, and personnel for conducting the test. The test length shall not exceed one (1) interval of pipe between two (2) manholes. Air test procedures may be dangerous and the Contractor shall take all necessary precautions to prevent blowouts.

After the pipe has been backfilled and cleaned, pneumatic plugs shall be placed in the line at each manhole and inflated to 25 psi. Low-pressure air shall be introduced into this sealed line until

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the internal air pressure reaches 4 psi greater than the average back pressure of any groundwater that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize.

After the stabilization period (3.5 psi minimum pressure in the pipe), the portion of line being tested shall be acceptable if the time required in minutes for the pressure to decrease from 3.5 to 3.0 psi (greater than the average back pressure of any groundwater that may be over the pipe) is not less than the time indicated in the following table:

<u>Pipe Size (in.)</u>	<u>Time (Min.)</u>
4	2
6	4
8	5
10	6
12	7
15	9

Correction of Defective Work - If leakage exceeds the specified amount, the Contractor shall at his own expense make the necessary repairs or replacements required to permanently reduce the leakage to within the specified limit and the tests shall be repeated until the leakage requirement is met.

Any defects found in the system are to be repaired at the expense of the Contractor so as to conform strictly to the Specifications and to the satisfaction of the Commissioner. All repairs shown necessary by the tests are to be made, broken or cracked pipe replaced, all deposits removed, and sanitary sewer left true to line and grade and entirely clean, free from lumps of cement, protruding gaskets, bulkheads, etc., and ready for use before final acceptance by the City of New York.

D. Pipe to Manhole Connections - Connections of pipe to manholes shall be water tight.

END OF SECTION

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## **SECTION 33 41 13 – STORM SEWER SYSTEM**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Furnish and install storm sewerage drainage piping, fitting and accessories and bedding as per the Contract Documents.
- B. Furnish and install storm manholes, catch basins, drain basins, cleanouts, and treatment devices as per the Contract Documents.

#### **1.2 RELATED SECTIONS AND DOCUMENTS**

- A. Section 31 00 00 - Earthwork
- B. Section 33 49 00 – Storm Structures
- C. Contract Drawings

#### **1.3 REFERENCES**

- A. New York City Building Code, latest revision.
- B. NYCDEP Bureau of Water and Sewer Rules and Specifications, latest revision.
- C. ANSI/ASTM C14 – Concrete Sewer, Storm Drain, and Culvert Pipe
- D. ANSI C115/AWWA A21.15 – Flanged Ductile Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
- E. ANSI C111/ANSI A21.11 – Rubber Gasket Joint Seals
- F. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- G. AASHTO M294 and M252 – Corrugated Polyethylene Pipe Smooth Interior.
- H. ASTM C478 – Precast Reinforced Concrete Manhole Sections
- I. ASTM C923 – Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes.
- J. ASTM D1248 - Polyethylene Plastics Molding and Extrusion Materials
- K. ASTM D3034 – Standard for Sewer PVC Pipe and Fittings

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- L. ASTM D3212 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- M. ASTM D3350 – Polyethylene Plastics Pipe and Fittings Materials
- N. ASTM F1336 – Standard for PVC Gasketed Sewer Fittings

1.4 SUBMITTALS

- A. Shop Drawings: Indicate locations, elevations, invert elevations, piping, sizes and elevation penetrations of storm system piping and all appurtenant structures. Include signed and sealed engineering calculations for loading design of all structures.
- B. Product Data:
  - 1. Pipe: Provide catalog materials indicating pipe, pipe accessories, and fittings.
  - 2. Structures: Provide covers, component construction, features, configuration and dimensions.
- C. Material Certificates: Submit materials certificate to the Commissioner which is signed by material producer and Contractor, certifying that materials comply with, or exceed, the requirements herein
- D. Manufacturer's Installation Instructions: Indicate special procedures required to install products specified.

1.5 DEFINITIONS

- A. Bedding: Fill placed under, beside, around, and above pipe, prior to subsequent backfill operations.

1.6 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of pipe runs, connections, catch basins, trench drains, manholes, cleanouts, treatment devices and invert elevations.
- B. Identify and describe unexpected variations to subsoil conditions and the discovery of uncharted utilities.

1.7 COORDINATION

- A. Coordinate the site storm sewer work with the roof drain connection locations from the buildings.

## PART 2 - PRODUCTS

### 2.1 SEWER PIPE MATERIALS AND ACCESSORIES

- A. Ductile Iron Pipe: Comply with the requirements of ANSI C115/AWWA A21.15 – Flanged Ductile Iron Pipe with threaded flange.
- B. High-Density Polyethylene Pipe (HDPE): Comply with requirements of AASHTO M252 Type S and AASHTO M294, Type S for 12-inch through 60-inch diameter. Fittings shall conform to AASHTO M294, AASHTO M252, and ASTM D3350 Cell Classification 335420C. Joints shall be bell and spigot with an o-ring gasket meeting ASTM F477. Acceptable manufacturers: Advanced Drainage Systems, Inc. N-12 pipe (MEA 301-96-M) for sizes up to 48-inch diameter; Hancor Inc. Sure-Lok pipe (MEA 321-99-M); or approved equal.
- C. Bedding: Refer to Section 32 05 16 – Aggregate Materials.

### 2.2 PRECAST CONCRETE CATCH BASINS

- A. Precast Catch basins: 3,500 psi concrete reinforce for H20 design loading in accordance with ASTM C478 of size, shape, and depth as indicated on the Contract Drawings.
- B. Base Pad: Cast-in-place or precast reinforced concrete pad.
- C. Lid and Frame: Per details shown on Contract Drawings or approved equal.
- D. Hood: Standard cast iron hood and hook as manufactured by Campbell Foundry or approved equal.
- E. Steps: Cast Iron steps required for catch basin depth of 4-ft or greater. Steps shall be 10-inches wide with 5-inch tread per ASTM-48 Class 40 Standards.

### 2.3 CLEAN OUTS

- A. Lid and Frame: Heavy-duty cast iron construction with H20 design loading manufactured by Neenah or approved equal.
- B. Shaft Construction: HDPE shaft of internal diameter as specified on the Contract Drawings.
- C. Concrete Collar: Cast-in-place concrete, 3000-psi level top surface.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify the trench cut and excavation base to be hard, smooth, and dry.
- B. Verify excavation location, dimensions and elevation with Contract Drawings.

#### 3.2 PREPARATION

- A. Set all lines, elevations, and grades for utility work and maintain for the duration of work. Provide careful maintenance of bench marks, property corners, monuments, or other reference points.
- B. Protect and maintain in operating condition, existing utilities encountered during utility installation. Repair any damage to surface or subsurface improvements shown on the drawings.
- C. Coordinate structure placement with inlet and outlet pipe or duct sleeve locations and inverts required by other sections.
- D. Coordinate all building sewer connection locations and elevations with architectural and plumbing plans. Contractor shall comply with all local codes and regulations.
- E. Hand trim excavations to required elevations and thoroughly compact as per Section 31 00 00.
- F. Contractor shall install dewatering systems as required to construct the proposed utilities to the design elevations and using the methods described herein. Water pumped out of excavations shall be disposed of on-site for sedimentation removal, and will not be discharged directly to the City's storm drainage system without prior approval of NYCDEP.
- G. Remove large stones or other hard matter which may damage piping or impede consistent backfilling or compaction.
- H. Subgrade areas identified by the Commissioner as unsuitable shall be excavated to suitable material or a maximum of two additional feet, backfill with bedding material and compact as specified in Section 31 00 00 – Earthwork.

#### 3.3 BEDDING

- A. Excavate pipe trench in accordance with Section 31 00 00 for work of this section.
- B. Place and compact bedding material at trench bottom. Hand trim bedding for accurate placement of pipe to elevations indicated.

- C. Maintain moisture content of bedding material between 1% below and 3% above the optimum.

#### 3.4 INSTALLATION - PIPE

- A. Place pipe on minimum six (6) inch deep bed of compacted bedding aggregate.
- B. Install pipe, fittings, and accessories in accordance with ASTM C12. ASTM D2321, manufacturer's instructions and/or state or local requirements. Seal joints to be watertight.
- C. Lay pipe to slope gradients noted on Contract Drawings.
- D. Place and compact bedding aggregate at sides and to the springline of the pipe as per Section 31 00 00.
- E. Refer to Section 31 00 00 for trenching and backfill requirements. Do not displace or damage pipe when compacting.
- F. Refer to Section 33 49 00 for manhole and other structures requirements.

#### 3.5 INSTALLATION - CATCH BASINS

- A. Form bottom of excavation clean and smooth and to correct elevation. Place minimum of six (6) inch deep bed of compacted bedding aggregate.
- B. Form and place cast-in-place concrete base pad, with provision for storm sewer pipe end sections, or place precast reinforced concrete pad at the location and elevation specified on the plans.
- C. Level top surface of base pad to receive concrete shaft sections, sleeve to receive storm sewer pipe sections.
- D. Establish elevations and pipe inverts for inlets and outlets as indicated.
- E. Mount lid and frame level in grout, secured to top cone section to elevation indicated.
- F. Grates to be placed with the long direction of the slot perpendicular to the flow of pedestrian traffic when placed in walkways.

#### 3.6 INSTALLATION - CLEANOUTS

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Form and place cast-in-place concrete collar, with provision for storm pipe end sections.

3.7 INTERFACTE WITH EXISTING FACILITIES

- A. Compliance with Facility Owner Requirements: Connections made into existing facilities shall be performed in accordance with the requirements of the utility owner. The Contractor will be required to comply with all such requirements, including securing of all required permits, and paying the costs thereof. The cost of making the connections in accordance with the requirements of the Owner of the existing facility shall be included in the Contract Sum.

3.8 MODIFICATIONS OF EXISTING STRUCTURES

- A. General: The Contractor shall alter, reconstruct and/or convert existing structures where and as shown on the Drawings, and/or as approved by the Commissioner. In general, alterations shall be performed with the same type of material used in the original construction unless otherwise indicated on the Drawings or approved by the Commissioner.

3.9 CONSTRUCTION WITHIN THE PUBLIC. R.O.W

- A. Construction within the public right-of-way shall conform to all requirements of the City of New York and any other agency having jurisdiction.

3.10 CLEANING AND REPAIR

- A. Clean the entire drainage system of all debris and obstructions. This shall include, but not be limited to, removal of all formwork from structures, concrete and mortar droppings, construction debris and dirt. Thoroughly flush the system clean and furnish all necessary hose, pumps, pipe and other equipment that may be required for this purpose. Do not flush debris into existing storm drains or streams; remove all debris from the system. Perform all removals and disposal in accordance with Contract Specifications for Construction Waste Management & Disposal.
- B. After the system has been cleaned, thoroughly inspect the system. Promptly make repairs as necessary.
- C. Perform all work of cleaning and repair as specified herein at own expense and to the complete satisfaction of the Commissioner.
- D. It shall be the Contractor's responsibility to comply with all New York State, City and local regulations.

3.11 MODIFICATIONS OF EXISTING STRUCTURES

Upon completion of the work and before backfill is placed and final acceptance by the Commissioner, the drainage system shall be subject to a final inspection in the presence of the Commissioner and/or Construction Manager. The work shall not be

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considered as complete until all requirements for line, grade, cleanliness, and workmanship have been completed to the satisfaction of the Commissioner.

END OF SECTION 33 41 13

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## **SECTION 33 49 00 - STORM STRUCTURES**

### **PART 1 - GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Monolithic concrete manholes with masonry transition to lid frame, covers, anchorage and accessories.
- B. Modular precast concrete manhole sections with tongue- and-groove joints with masonry transition to lid frame, covers, anchorage and accessories.

#### **1.02 RELATED SECTIONS AND DOCUMENTS**

- A. Section 31 00 00 - Earthwork
- B. Section 33 41 13 - Storm Sewer Systems
- C. Section 33 31 00 - Sanitary Sewer Systems
- D. New York City Department of Environmental Protection Specification and applicable code requirements.

#### **1.03 REFERENCES**

- A. ANSI/ASTM C55 - Concrete Building Brick.
- B. ASTM A48 - Gray Iron Castings.
- C. ASTM C478 - Precast Reinforced Concrete Manhole Sections.
- D. ASTM C923 - Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes.
- E. International Masonry Industry All-Weather Council (IMIAC): Recommended Practices and Guide Specification for Cold Weather Masonry Construction.

#### **1.04 SUBMITTALS**

- A. Shop Drawings: Indicate manholes locations, elevations, invert elevations, piping, sizes and elevations of penetrations.
- B. Product Data: Provide manhole covers, component construction, features, configuration, and dimensions.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Manhole Sections: Reinforced precast concrete.
  - 1. 3,500 psi concrete reinforced for H20-16 loading or greater in accordance with ASTM C478 with self-sealing butyl gaskets in accordance with ASTM C923.
  - 2. Construct manholes of precast concrete sections as required by Drawings to size, shape, and depth indicated.
- B. Manhole Sections: Reinforced cast-in-place concrete.
  - 1. Cast-in-place Manholes shall be constructed of 3,500 psi concrete reinforced for H20-16 loading or greater.
  - 2. Forms shall be accurately made of steel sheets and shapes of sufficient strength to form dense watertight walls to true dimensions.
  - 3. Concrete shall be deposited in evenly distributed layers of about 18 inches, with each layer vibrated to bond it to the preceding layer.
- C. Mortar and Grout
  - 1. Masonry cement used for laying up dimension masonry shall conform to the requirements of ASTM C91.
  - 2. Grouting material for use in grouting anchor bolts, flanges, dowels and other miscellaneous items in concrete shall be a non-metallic, non-shrink grout which when mixed with water, will harden rapidly to produce a permanent anchoring bond. It shall be free of any corrosion promoting agents.
- D. Reinforcement: Grade 60 deformed steel bars with galvanized finish. Reinforcing shall conform to the latest revised edition of the AISC code.

### 2.02 COMPONENTS

- A. Lid and Frame: Per details shown on plans or approved equal.
- B. Manhole Steps: Cast iron Campbell Foundry Company Pattern No. 2593 or approved equal.
- C. Base Pad: Precast reinforced concrete or Cast-in-place concrete leveled top surface.

### 2.03 CONFIGURATION

- A. Shaft Construction: Concentric with eccentric cone top section; lipped male/female gasketed dry joints; sleeve to receive pipe sections.
- B. Shape: Cylindrical.
- C. Clear Inside Dimensions: 48 inch diameter or as indicated on plans.
- D. Design Depth: As indicated on plans.

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- E. Clear Lid Opening: 24 inches diameter minimum.
- F. Pipe Entry: Provide openings as indicated
- G. Main and Lateral Pipes: Neatly cut off main and lateral pipes flush with inside of manhole or inlet where they enter structure walls, and point up irregularities and rough edges with nonshrink grout.
- H. Inverts: Shape inverts for smooth flow across structure floor as shown on Drawings. Use concrete and mortar to obtain proper grade and contour and finish surface with fine textured wood float. Provide benches in all sanitary sewer manholes.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Verify items provided by other sections of work are properly sized and located.
- B. Verify that built-in items are in proper location, and ready for roughing into Work.
- C. Verify excavation for manholes is to the correct depth and that the bottom is hard and smooth.

#### 3.02 PREPARATION

- A. Set all lines, elevations, and grades for utility and drainage system work and maintain for the duration of work. Provide careful maintenance of bench marks, property corners, monuments, or other reference points.
- B. Protect and maintain in operating condition, existing utilities encountered during utility installation. Repair any damage to surface or subsurface improvements shown on the drawings.
- C. Verify location, size, elevation, and other pertinent data required to make connections with existing sewer systems indicated on the Drawings.
- D. Coordinate structure placement with inlet and outlet pipe or duct sleeve locations and inverts required by other sections.
- E. Coordinate all building utility connection locations and elevations with architectural plans. Contractor shall comply with all local codes and regulations.
- F. Install dewatering systems that will be required to construct the proposed utilities to the design elevations and using the methods described herein. Water pumped out of excavations shall be disposed of on-site for sedimentation removal, and will not be discharged directly to the City's storm drainage system.

- G. Subgrade areas identified by the Commissioner as not being capable of supporting the proposed structure shall be excavated to suitable material or a maximum of two additional feet, backfill with bedding material and compact as specified. This item shall be paid for on a unit price basis.

### 3.03 PLACING MANHOLE SECTIONS

- A. Place granular base pad, trowel top surface level for cast-in-place bases.
- B. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.
  - 1. After completion of excavation, setting of reinforcing steel and placing inlet and outlet pipes, but prior to placing concrete for invert slab, set precast concrete blocks on slab foundation to support first manhole barrel which shall be lowered into excavation, grooved end first, and set on concrete blocks. Align and adjust to proper grade prior to placing invert slab, which shall be poured immediately after setting of first section of manhole barrel.
  - 2. Prior to setting subsequent manhole barrel sections, apply primer to tongue and groove ends and allow to set in accordance with manufacturer recommendations. Place gasket on tongue end. Lower next section into position, and remove excess material from interior of structure. Add additional primer on exterior of joint, if necessary, for completely watertight joint.
  - 3. Castings belonging to reset or converted structures shall be salvaged and reused, if possible.
  - 4. Set cover frames and covers securely to correct line and grade elevations.
  - 5. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.
  - 6. Coordinate with other sections of work to provide correct size, shape, and location.

END OF SECTION

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## Appendix A

# Geotechnical Engineering Study For Central Boiler Replacement Project Ward's Island, New York

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# Geotechnical Engineering Study

for

## Central Boiler Replacement Project Ward's Island, New York

*Prepared For:*

**Cosentini Associates**  
Two Pennsylvania Plaza – Third Floor  
New York, NY 10001

*Prepared By:*

**Langan Engineering & Environmental Services, Inc. PC**  
21 Penn Plaza  
360 West 31<sup>st</sup> Street, 8<sup>th</sup> Floor  
New York, New York 10001  
NJ Certificate of Authorization No: 24GA27996400

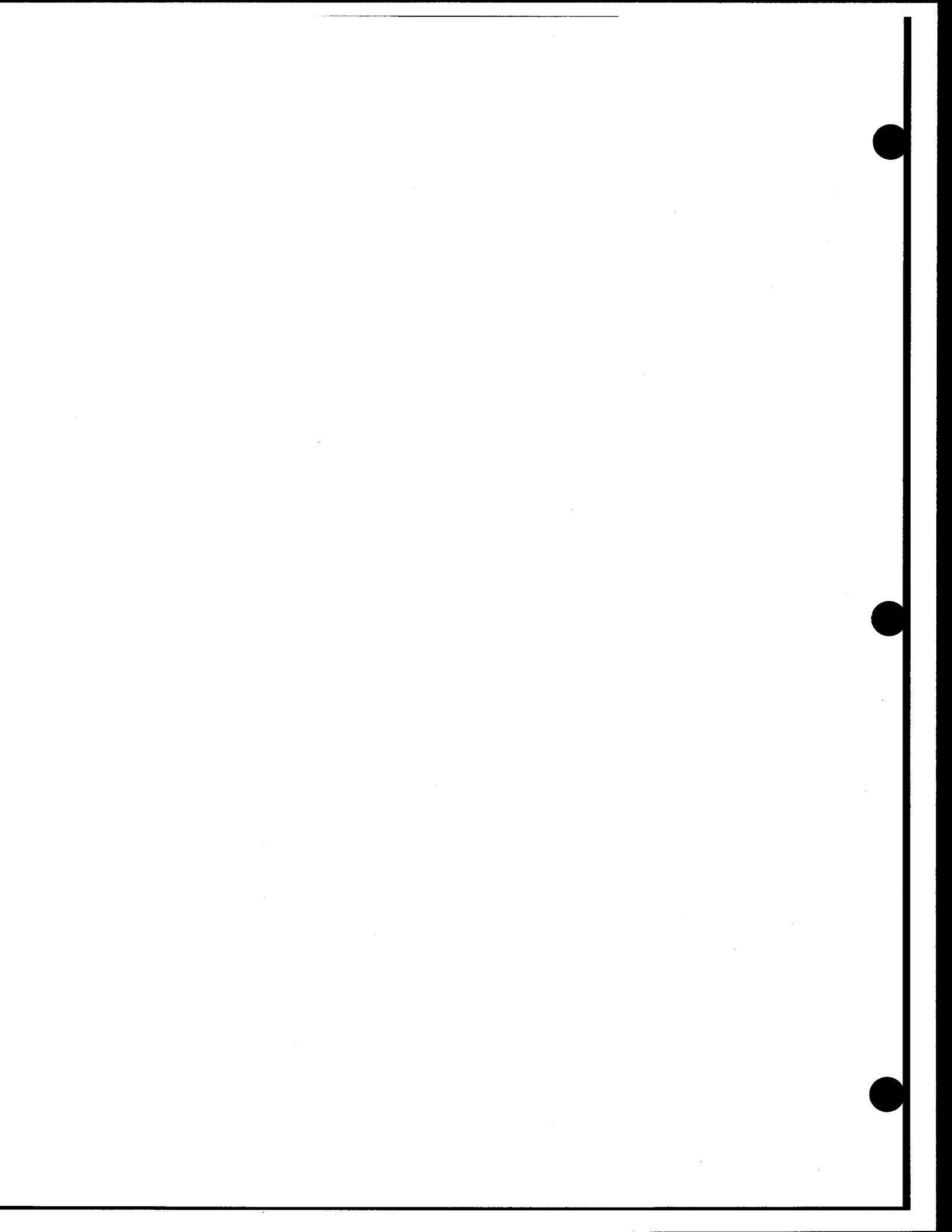


  
Robert A. Garino, Professional Engineer  
New York State Professional Engineer License No. 079030

  
Alan R. Poeppel, Professional Engineer  
New York State Professional Engineer License No. 080220

24 August 2012  
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ENGINEERING & ENVIRONMENTAL SERVICES





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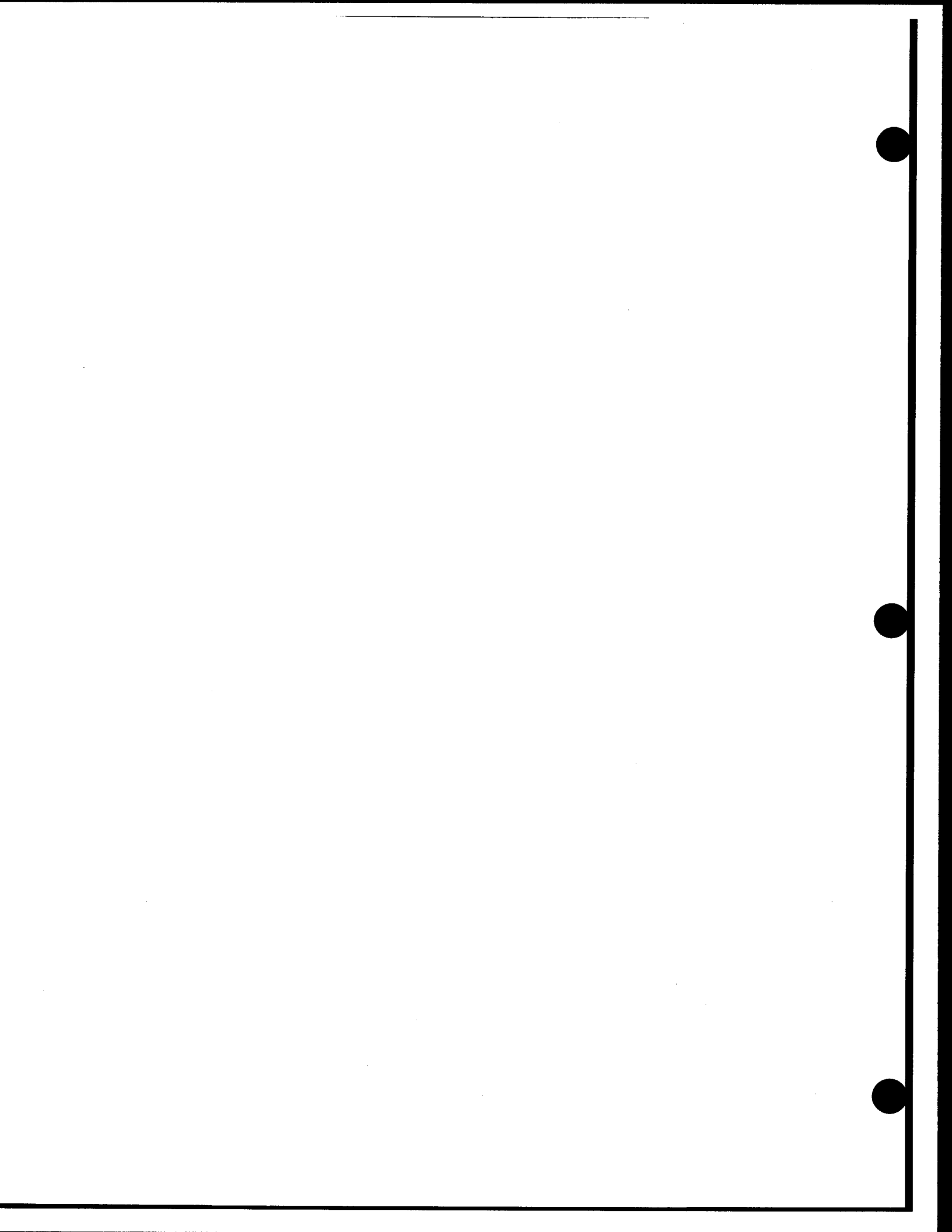
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## **INTRODUCTION**

This report summarizes our geotechnical engineering study for the proposed Central Boiler Replacement project at Wards Island in New York, New York. The work for this study was performed by Langan Engineering and Environmental Services, P.C. (Langan).

The purpose of this study was to explore and evaluate the subsurface conditions, and to develop recommendations related to the support of the proposed boiler pads and associated utilities. Our understanding of the project, the results of our investigation and a summary of our recommendations are provided herein.

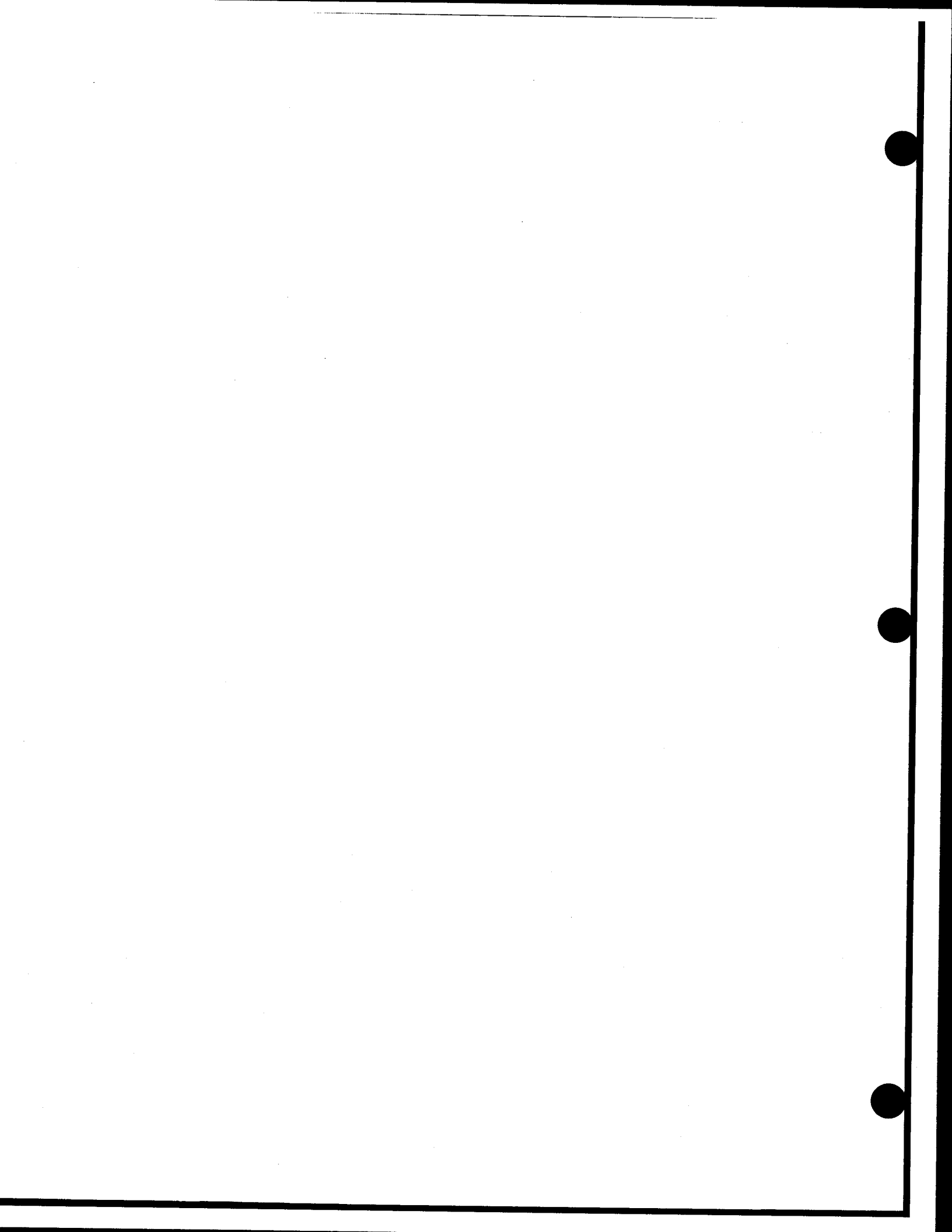
Equipment information was provided by the Cosentini Associates (Cosentini). All elevations reported herein are referenced to Borough President of Manhattan topographical datum (BPMD) which is 2.750 ft above Mean Sea Level at Sandy Hook, New Jersey (NGVD 1929).

## **SITE DESCRIPTION**

Randall's Island is within the East River of New York City and is bordered by a navigation channel to the west (separating the island from Manhattan), the Hell Gate navigation channel to the east (separating the island from Queens), and the Bronx Kill to the north (separating the island from the Bronx). The navigation channels to the east and west converge at the south end of the island. The Triborough Bridge connects the Bronx, Manhattan and Queens via Randall's Island. A Site Location Map is attached as Drawing No.1.

Several buildings and facilities exist on the island including, the New York City Fire Department Training Facility, the Manhattan Psychiatric Hospital, NYCDEP Ward's Island Sewage Treatment Plant, several New York City Parks Department buildings, the Triborough Bridge Authority, Charles H. Gay care center and several low rise structures. The island also includes public park land with several ball fields.

In 1855 the state of New York acquired three separate land masses between Manhattan, the Bronx and Queens; Randall's Island, Ward's Island and an area known as the Sunken Meadow. Over the years, construction debris from various projects filled in the land between the three islands to form one main island. Although the area exists as one land mass, the Northern part is still known as Randall's Island while the southern is commonly called Ward's Island. A map showing the historic shoreline of the separate islands is attached as Drawing No. 2.



## **PROPOSED CONSTRUCTION**

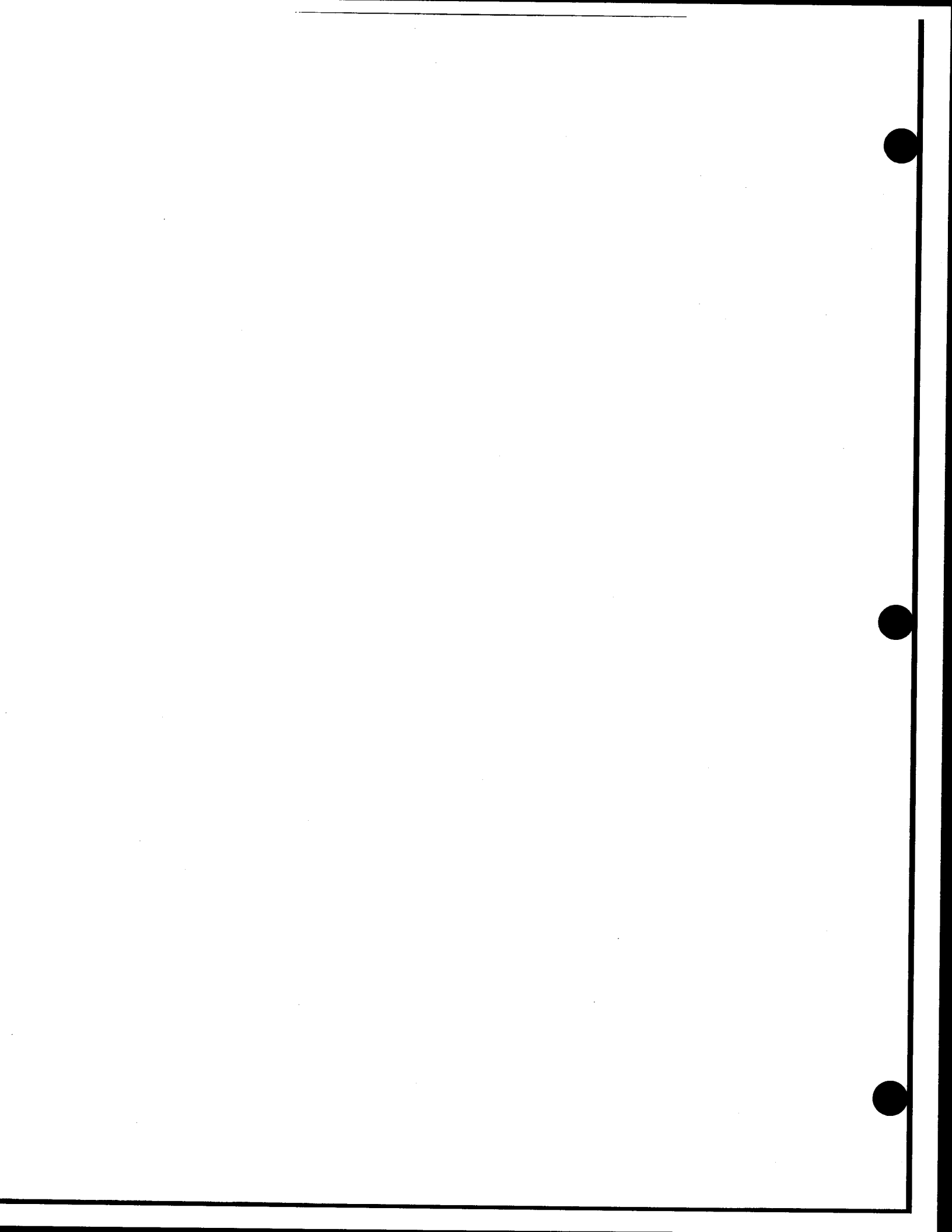
The overall project consists of installing new boiler equipment at three of the New York City Homeless Shelters on Wards Island – the Clarke Thomas building, the Keener building and the HELP SEC building. The work at the Clark Thomas building will replace the existing boiler equipment, while the new boilers at the Keener and HELP SEC buildings will be remotely located. The remote systems will be single-story enclosures having footprint areas of about 45 ft by 35 ft each. The systems will consist of a two-boiler arrangement and will include fuel tanks and ancillary equipment. Below-grade supply and return lines will be installed between the buildings and the remote boiler pads. The remote boiler pad at the HELP SEC building will encroach on a planted berm between the road and the parking lot. The grade differential between the road and parking lot is about 3 ft; a small wall will be constructed to retain the berm.

Based on information provided by Cosentini, each boiler weighs about 9.6 kips and each fuel tanks weighs about 70 kips when full, for a total load of about 160 kips for each new boiler system.

## **SUBSURFACE EXPLORATION**

The subsurface exploration program consisted of drilling a total of four borings at the three subject buildings, identified as Borings B-1 through B-4(OW) and installing three groundwater observation wells between 30 July and 6 August 2012. Borings were drilled by Warren George, Inc. to depths ranging from 30 to 35 ft below ground surface under the full-time special inspection of Langan. The approximate locations of the borings are shown on attached Drawing No. 3 – Boring Location Plan.

Borings were advanced through the soil using rotary drilling techniques with a tri-cone roller bit and drilling mud. Four-inch-diameter steel casing provided soil support when necessary. N-values were measured and soil samples were obtained continuously through the fill and typically at 5-ft intervals thereafter. Soil samples were obtained using a standard two-inch-diameter standard split spoon sampler driven by a 140-pound safety hammer in accordance with ASTM D-1586. Recovered Soil samples were visually examined and classified in the field in accordance with the Unified Soil Classification System (USCS), and assigned classification numbers in accordance with the Building Code. Rock cores were obtained using NX-sized double-tube core barrels with a diamond-cutting bit. Rock type, REC and RQD values were determined for each rock core.



Copies of boring logs are provided in Appendix A.

#### Observation Wells

Three groundwater observation wells, identified as observation wells B-2(OW), B-3(OW), and B-4(OW), were installed in the completed boreholes as part of the subsurface exploration program. The wells consisted of a 10 ft section of 2-inch-diameter Schedule 40 PVC screen and riser pipe. The annulus between the original borehole and the PVC pipe was backfilled with No. 2 filter sand to about 2 ft about the slotted screen. Approximately 2 ft of bentonite pellets were placed above the filter sand to prevent surface water from influencing the wells readings. The remainder of the annulus was backfilled with soil cuttings. A flush-mount well cap was installed at ground level.

#### Geotechnical Laboratory Testing

Laboratory tests were conducted on representative soil samples obtained from the project site. The purpose for testing soil samples is to confirm field classifications and to determine the engineering properties of the material.

Laboratory tests included Sieve Analysis (ASTM D-422), Water Content Determination (ASTM D-2216), Percent Fines (ASTM D-1140) for particles passing the #200 sieve, and Atterberg Limits determination (ASTM D4318). Test results are reproduced in Appendix B.

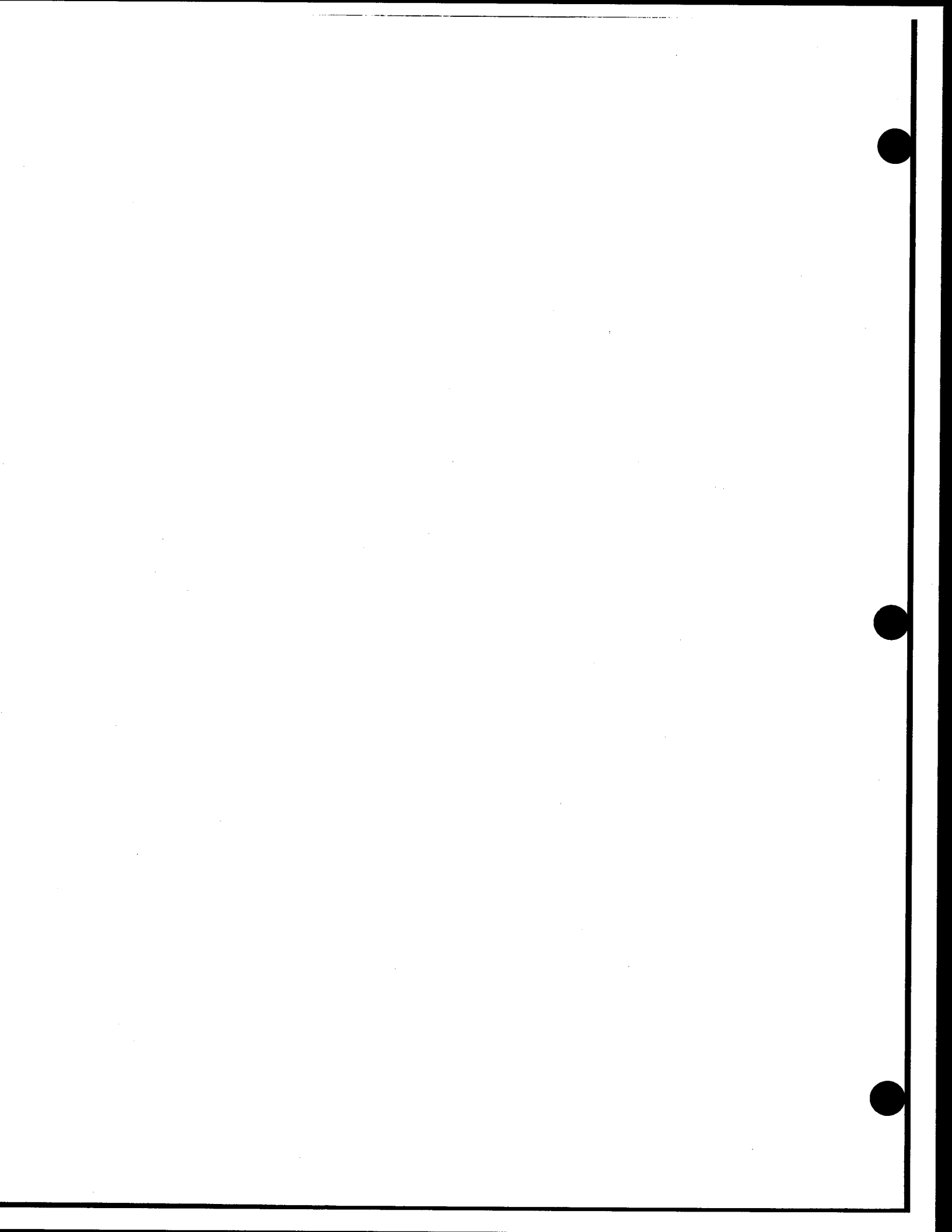
Results from these tests indicate that subsurface material is typically a poorly-graded, silty sand corresponding to Unified Soil Classification of SP-SM or SM; one sample was classified as low plasticity clay. Percent fines range from about 7 to 60% and typically range between 7 and 17%.

### **SUBSURFACE CONDITIONS**

The generalized subsurface profile on Ward's Island typically consist of fill material overlying sand and gravel which in turn overlies bedrock (the top of which is weathered to varying degrees. Detailed descriptions of each soil stratum for each of the project areas are given below.

#### **HELP SEC Building**

The historic map of the island shows the area around the HELP SEC building to be entirely within the limits of the historic Ward's Island. Existing top of ground surface at the proposed boiler location is at about el 19.





The subsurface investigation at the HELP SEC building included drilling two borings. A part plan identifying boring locations in this area is reproduced as Drawing No. 4. The generalized subsurface profile in this area consists of fill overlaying sand and bedrock; a subsurface profile is presented as Drawing No. 5. A detailed description of each soil strata at the HELP SEC building are given below in descending order.

#### Fill [Class 7]

A layer of surficial fill, consisting of coarse to fine sand with varying amounts of silt, gravel, and manmade material (i.e. brick, asphalt, etc.) was encountered in Borings B-1 and B-2(OW). Thickness of the fill ranged between 3 and 4 ft, corresponding to about elevation el 16 and el 15 respectively. Standard Penetration Testing (SPT) N-values within the fill layer range from 26 to 46 blows per foot (bpf), averaging about 38 bpf. The fill is considered medium dense to dense.

The fill layer is classified as Building Code Class 7 material.

#### Sand [Class 3]

Brown, coarse to fine Sand, with various amounts of gravel and silt was encountered immediately below the fill layer. The thickness of the sand layer ranges from 14 to 20 ft. SPT N-values within the sand ranged from 12 to 39 bpf, averaging about 25 bpf. The sand is considered medium dense to dense. An about 1-ft boulder was encountered in Boring B-1 at about 14 ft below existing parking lot grade.

The sand is classified as Building Code 3a and 3b material.

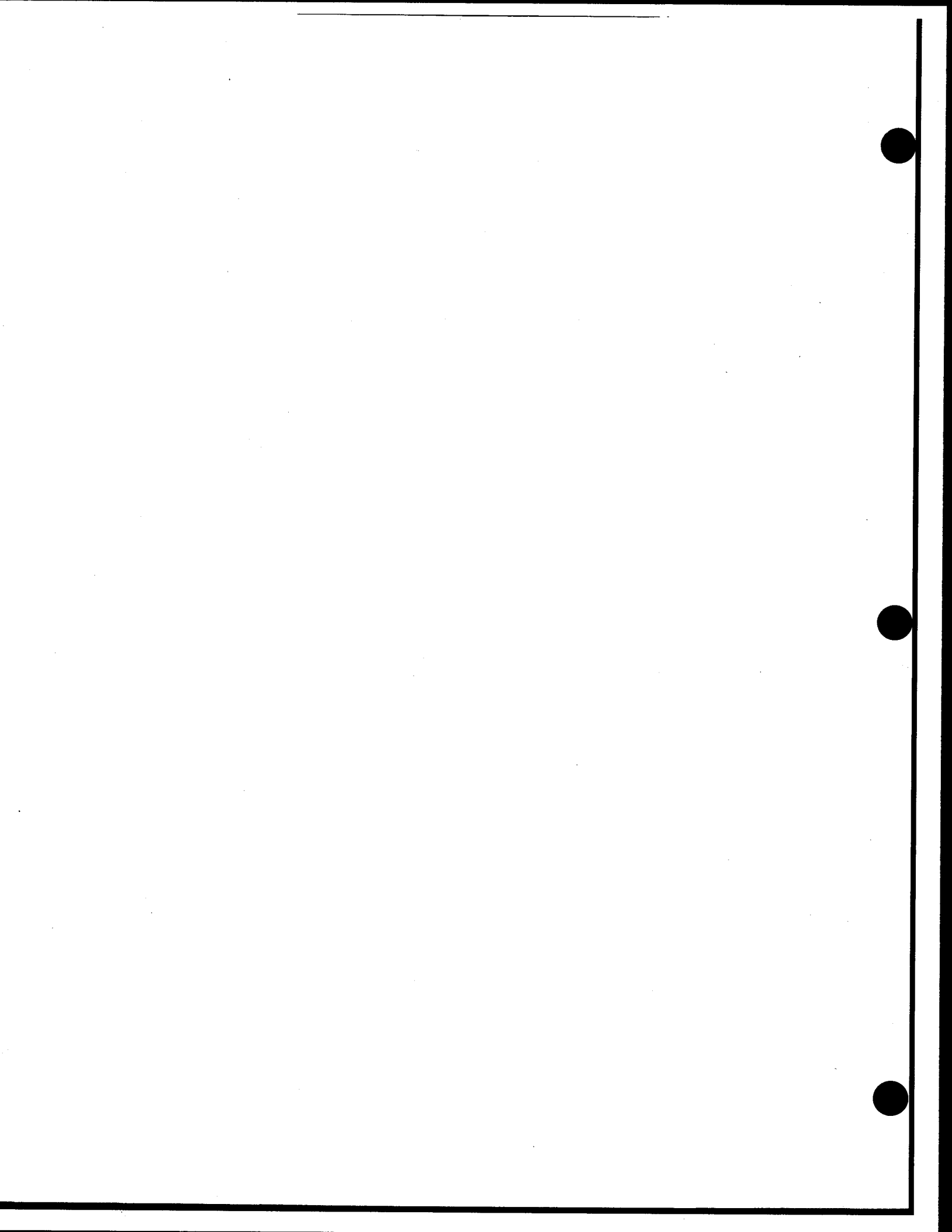
#### Weathered Bedrock [Class 1d]

A layer of weathered bedrock was encountered immediately above the sound rock. The material consists of bedrock that has been completely weathered to varying amounts of gravel, sand, clay, and silt. The top of the weathered bedrock was encountered between about 18 and 23 ft below the existing parking lot grade and the stratum is between 6- and 7-ft thick. The two SPT N-values recorded in the weathered bedrock layer were 42 and 52 bpf. The weathered bedrock is considered dense to very dense.

The weathered bedrock is classified as Building Code Class 1d rock.

#### Bedrock [Class 1a/1b]

The bedrock encountered in borings B-1 and B-2(OW) was black, white, grey and pink, coarse grained pegmatite and gneiss. The top of sound bedrock was encountered between 25 and



29 ft below existing parking lot grade; the corresponding top of sound rock elevation is about el -6 and el -10. Core recovery ranged from about 97 to 100 percent and the RQD value ranged from about 73 to 92 percent. The bedrock was typically found to be slightly fractured and slightly weathered at the joints to fresh.

The bedrock is classified as Building Code Class 1a or Class 1b rock.

#### Groundwater

Groundwater elevations at the HELP SEC building were measured in Observation Well B-2(OW) throughout the course of the field exploration. Groundwater level was measured to be about 11 ft below the existing grade; the corresponding groundwater elevation is about el 8.

#### **Keener Building**

The historic map of the island shows the area around the Keener building to be entirely within the limits of the historic Ward's Island. Existing top of ground surface at the proposed boiler location is at about el 18.

In January 2003, The DDC drilled 12 borings around the perimeter of the Keener Building; two of which are in the vicinity of the proposed boiler pad. One additional boring was drilled at the Keener Building as part of this study. A part plan identifying boring locations in this area is reproduced as Drawing No. 6. The generalized subsurface profile in this area consists of fill overlaying sand and bedrock. It is noted that a layer of sandy clay exists within the sand stratum at the Keener Building. A subsurface profile is presented as Drawing No. 7. A detailed description of each soil strata at the Keener building are given below in descending order.

#### Fill [Class 7]

A layer of surficial fill, consisting of coarse to fine sand with varying amounts of silt, gravel, and manmade material (i.e. brick, asphalt, etc.) was encountered in Boring B-3(OW). The thickness of the fill is about 6 ft; the corresponding elevation is about el 12.5. SPT N-values within the fill layer range from 12 to 17 blows per foot (bpf), averaging about 14 blows per foot (bpf). The fill is considered medium dense.

The fill layer is classified as Building Code Class 7 material.

#### Sand [Class 3]

Brown coarse to fine sand, containing various amounts of gravel and silt was encountered immediately below the fill layer. Thickness of the sand layer is about 12 ft. SPT N-values



within the fill ranged from 14 to 26 bpf, averaging about 19 bpf. The sand is considered medium dense.

The sand is classified as Building Code 3b material.

An about 2-ft-thick pocket of sandy clay was encountered within the sand layer at about 8 ft below existing grade. This material was also identified in the 2003 DDC borings as "Bull's Liver" (an inorganic silt with low plasticity). The 2003 borings suggest this layer to be 5 to 6 ft thick; however, this determination was arbitrarily assigned between STP samples taken at 5 ft intervals. SPT N-values recorded in this material range from 7bpf to 23 bpf. The single SPT N-value recorded during this exploration was 9 bpf.

The clay sample was sent for laboratory testing. The results of Atterberg Limits testing indicate liquid limit (LL) to be 26, plastic limit (PL) to be 18, and plasticity index (PI) to be 8. The natural moisture content of the clay was reported to be about 24 percent. The percentage of fines in the sample was reported to be about 58 percent. The results indicate that the material typically corresponds to a USCS classification of CL.

The clay is classified as Building Code Class 4b material.

#### Sand and Gravel [Class 2]

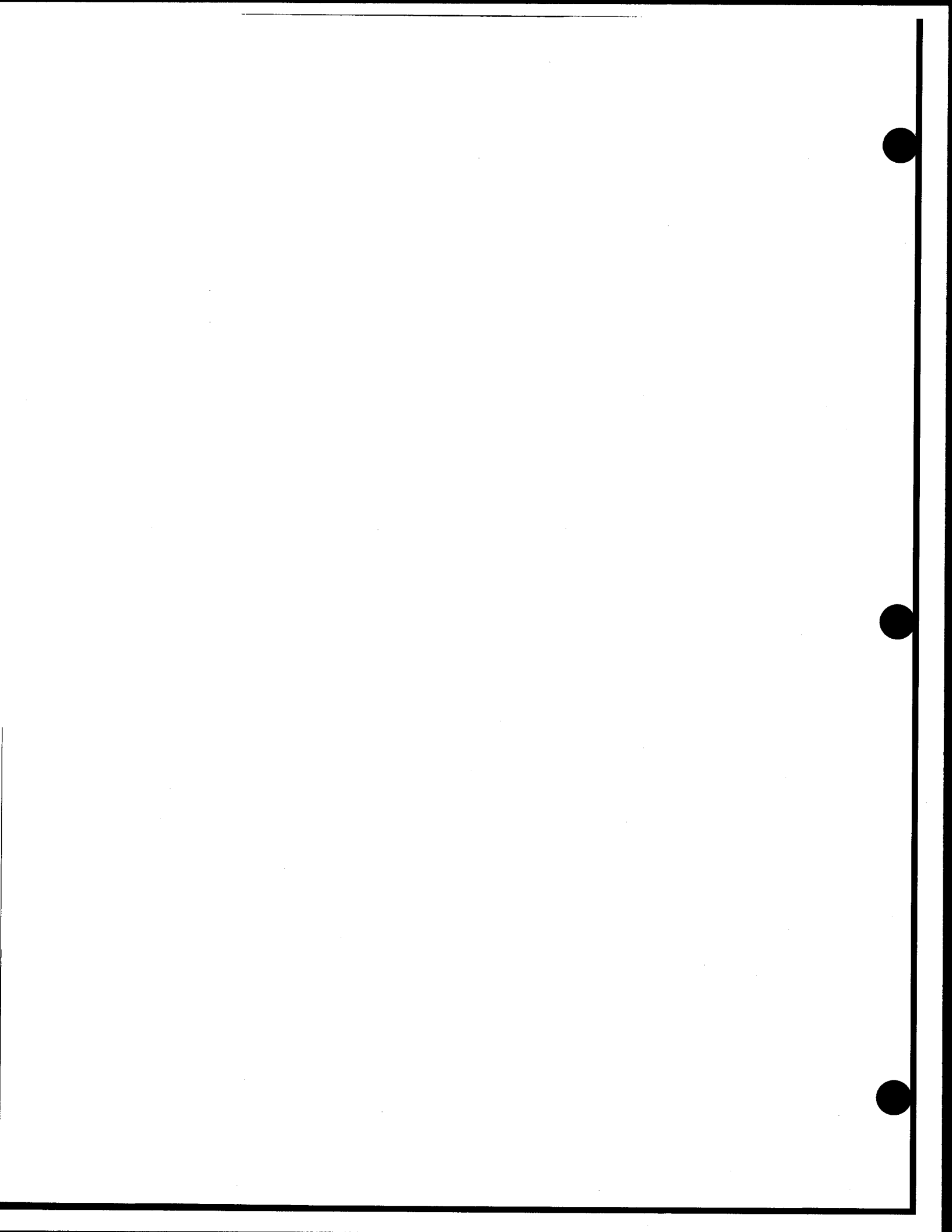
A layer of black and grey fine gravel and coarse to fine sand containing various amounts of silt was encountered below the sand layer. The top of sand and gravel layer is about 18.5 ft below the existing garden grade, corresponding to about el 0. Thickness of the sand and gravel layer is about 11.5 ft. SPT N-values within the sand and gravel ranged from 25 to 73 bpf, averaging about 43 bpf. The sand and gravel is considered medium dense to very dense.

One sample collected from within the sand and gravel layer was laboratory tested. The natural moisture content of the sample was reported to be about 8 percent. The percentage of fines in the sample was reported to be about 10 percent. The results indicate that the sample typically corresponds to SP-SM in accordance with USCS.

The sand and gravel is classified as Building Code Class 2 material.

#### Bedrock [Class 1b]

The bedrock encountered in Boring B-3(OW) was grey, black and white, fine grained mica schist. The top of sound bedrock was encountered at about 30 ft below existing parking lot



grade, corresponding to about el -11.5. Core recovery was about 97 percent and the RQD value was about 73 percent. The bedrock was typically found to be fresh and hard.

The bedrock is classified as Building Code Class 1b rock.

#### Groundwater

Groundwater elevations at the Keener building were measured in observation well B-3(OW) throughout the course of the field exploration. Groundwater level was measured to be about 10 ft below the existing grade; the corresponding groundwater elevation is about el 8.5.

#### **Clarke Thomas Building**

The historic map of the island shows the area around the Clark Thomas building to be entirely within the limits of the historic Ward's Island. Existing top of ground surface at the proposed boiler location is at about el 27; the cellar slab, where the new boiler will be installed, is about 8 ft below grade, corresponding to el 19.

The subsurface investigation at the Clark Thomas building included drilling 1 boring. A part plan identifying boring location in this area is reproduced as Drawing No. 8. The generalized subsurface profile at the Clark Thomas Building consists of fill overlaying sand and bedrock; a subsurface profile is presented as Drawing No. 9. A detailed description of each soil strata at the Clark Thomas building are given below in descending order.

#### Fill [Class 7]

A layer of surficial fill, consisting of coarse to fine sand with varying amounts of silt, gravel, and manmade material (i.e. brick, asphalt, etc.) was encountered in Boring B-4(OW). The thickness of the fill is about 6 ft; the corresponding elevation is about el 21. SPT N-values within the fill layer range from 24 to 59 blows per foot (bpf), averaging about 43 bpf. The fill is considered medium dense to very dense.

The fill layer is classified as Building Code Class 7 material.

#### Sand [Class 3]

Brown coarse to fine sand, containing various amounts of gravel and silt was encountered immediately below the fill layer. The top of the sand layer is about 6 ft below the existing garden grade; the corresponding elevation is about el 21. The thickness of the sand layer is about 21 ft. SPT N-values within the fill ranged from 11 to 34 bpf, averaging about 19 bpf. The sand is considered medium dense to dense. Boulders were encountered within the sand layer at about 18 ft and 21.5 ft below existing grade.





One sample collected from within the sand layer was laboratory tested. The natural moisture content of the sample was reported to be about 19 percent. The percentage of fines in the sample was reported to be about 17 percent. The results indicate that the sample typically corresponds to SM in accordance with USCS.

The sand is classified as Building Code 3a and 3b material.

#### Bedrock [Class 1c]

The bedrock encountered in Boring B-4(OW) was black, white and grey, coarse grained gneiss. The top of sound bedrock was encountered at about 27 ft below existing garden grade; the corresponding top of sound rock elevation is about el 0. Core recovery was about 73 percent and the RQD value was about 42 percent. The bedrock was typically found to be slightly fractured and slightly weathered at the joints.

The bedrock is classified as Building Code Class 1c rock.

#### Groundwater

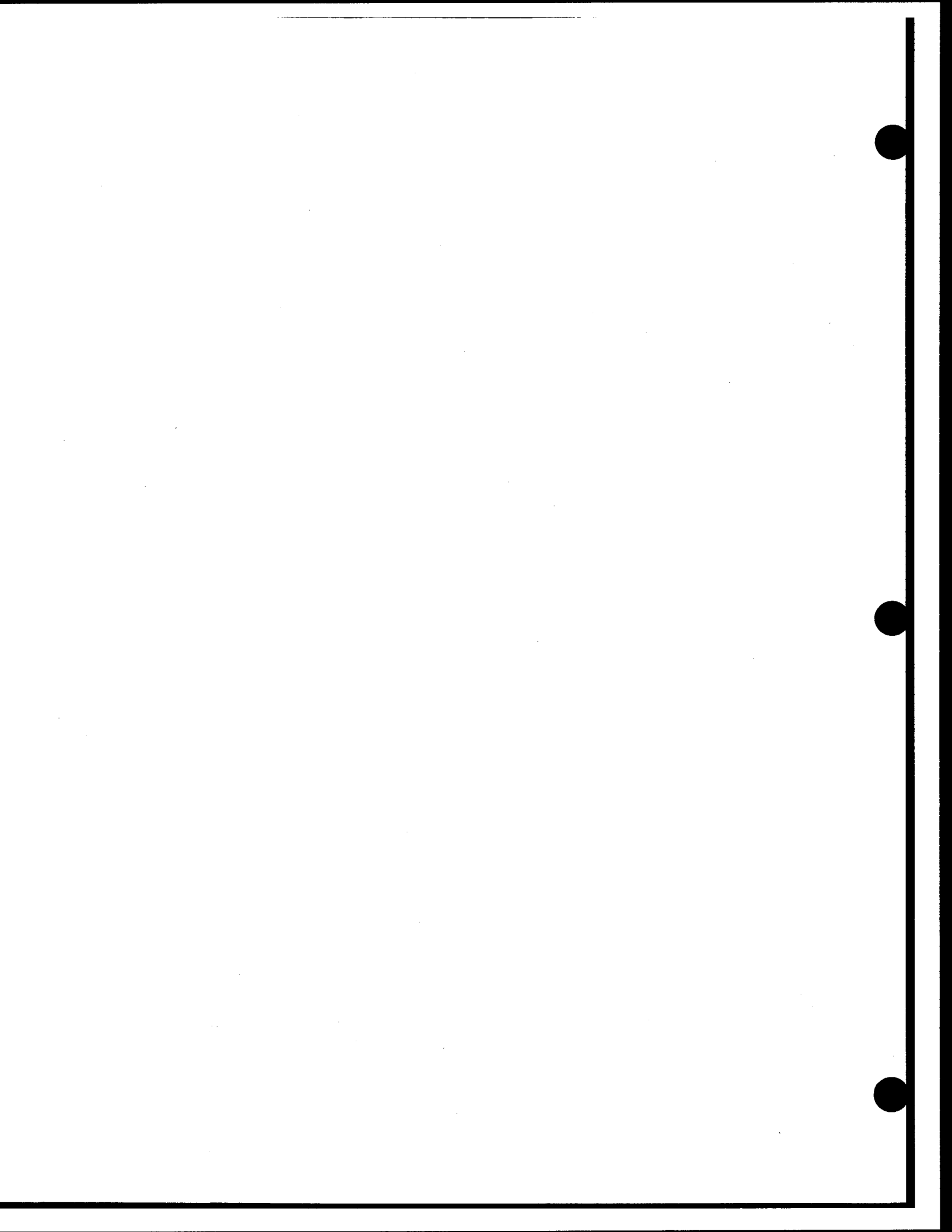
Groundwater elevations at the Clark Thomas building were measured in observation well B-4(OW) throughout the course of the field exploration. Groundwater level was measured to be about 21 ft below the existing grade; the corresponding groundwater elevation is about el 6.

### **DESIGN RECOMMENDATIONS**

Site work discussed in this report includes foundation support for at-grade boiler pads, installation of utilities and lateral earth pressures for retaining walls. Recommendations for each of these works at the three subject buildings are provided below.

#### **Foundation Support**

We recommend that the proposed remote boiler pad buildings are supported on a shallow foundation system (*i.e.*, individual spread and continuous wall footings) bearing on or in the Building Code Class 3 material. The recommended basic allowable bearing pressure for the bearing material is 2 tons per square foot (tsf). It is noted that the Silt and Clay material encountered in Borings B3(OW) at the Keener Building should be excavated and backfilled in accordance with the Fill Material and Compaction Criteria section prior to foundation construction if the bottom of the footing is in this material.



The recommended minimum footing area for individual column support is 9 square ft and the recommended minimum footing width for continuous footings is 2 ft. The bottom surface of all foundation elements should bear a minimum of 4 ft below adjacent ground surface for frost protection. We estimate a total settlement of footings of less than 1/2 inch.

All footing bearing surfaces should be level and clear of debris, standing or frozen water, and other deleterious materials. In accordance with the Building Code requirements for Special Inspection, a professional geotechnical engineer should inspect and approve the foundation subgrade to assure that the subgrade material is adequate to provide the recommended allowable bearing pressure. Over-excavation of the fill material may be necessary to reach natural bearing soils.

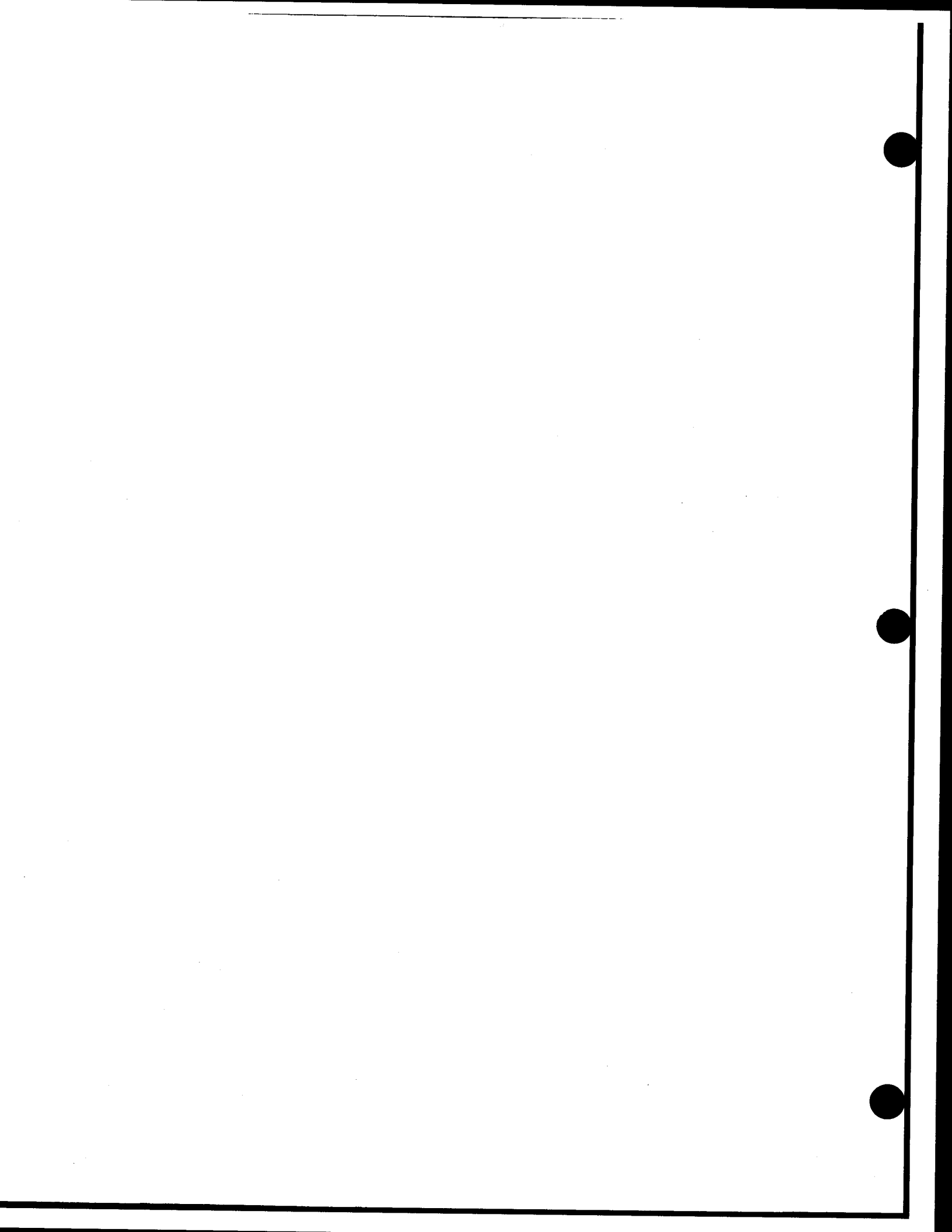
The subsurface material at the Clark Thomas building at the depth of the existing cellar consists of sand and gravel with a basic allowable bearing pressure of 2 tsf. Considering the boring was drilled outside of the building footprint, the material at the cellar level, the weight of the excess overburden material above the cellar level and the soil confinement provided by the cellar space, the presumptive allowable bearing pressure at the cellar for the new boiler can be increased to 3 tsf.

## **Seismic Evaluation**

### Design Spectral Response Accelerations

According to the Building Code Section 1615.1, the mapped maximum considered earthquake response spectra for the short period ( $S_s$ ) and 1-second period ( $S_1$ ) are 0.365g and 0.071g, respectively. The subsurface Standard Penetration Resistance in top 100 ft has an average N-value ( $\bar{N}$ ) greater than 50; this very dense soil profile corresponds to a Site Class of C. Per table 1615.1.2 (1) and 1615.1.2 (2) of the Building Code, the site coefficients for the short period ( $F_a$ ) and 1-second period ( $F_v$ ) are each given as 1.2 and 1.7, respectively. The design spectral response accelerations at short periods ( $S_{DS}$ ) and 1-second periods ( $S_{D1}$ ) are 0.292g and 0.081g, respectively.

Considering that the structure is not an occupied space in accordance with the Building Code Table 1604.5, we have not determined a Structural Occupancy Category (SDS) for the structure. We recommend that the design team conforms to with Building Code Section 1621 – Architectural, Mechanical, and Electrical Component Design Requirements, for design of the boiler pads.



### Liquefaction Potential

The Building Code requires an evaluation of the liquefaction potential of non-cohesive soils below the groundwater table and to a depth of 50 ft below the ground surface. Liquefaction potential was estimated using the simplified 2008 NYC Building Code screening process. Our evaluation showed that only two of the 14 points fall below the threshold line. Therefore it is our judgment that liquefaction need not be considered in the design. The NYC Building Code Liquefaction screening is shown in Drawing No.10.

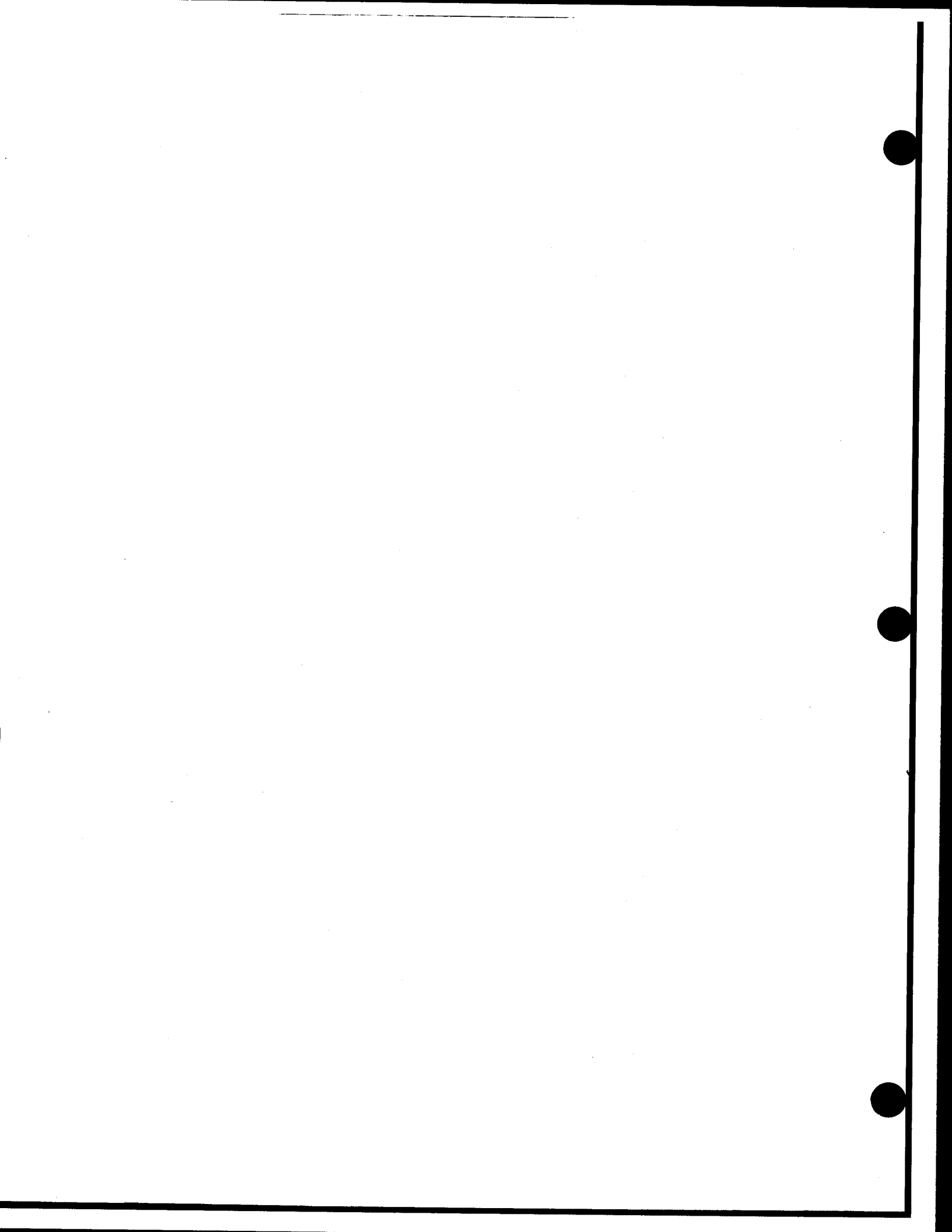
### **Slab Support**

The slab can be supported on grade bearing on fill material or natural sand provided that the soil materials are not disturbed (loosened by water and/or construction equipment action). The recommended modulus of subgrade reaction is 150 pounds per square inch per inch. We recommend a 6-inch-thick layer of  $\frac{3}{4}$  inch uniform clean crushed stone be placed and compacted to allow for uniform bearing and drainage.

The subgrade should be proof rolled. Proof rolling should consist of at least 8 complete coverages using a smooth drum vibrating roller having a minimum static drum weight of 5 tons. Areas exhibiting weaving, rutting or other indications of instability should be replaced with competent material in accordance with the Fill Material and Compaction Equipment section of this report.

### **Utility Support**

Based on the results of the subsurface exploration it is our judgment that utilities for the project can typically be supported on-grade within the fill or natural overburden material. In areas where pipe inverts are within the fill material or below the groundwater level, we recommend that trenches extend a minimum of 12 inches below the invert and that backfill material consist of uniform crushed stone. The crushed stone should be separated from the underlying subgrade material with a geosynthetic geotextile.



### **Lateral Earth Pressure**

The proposed retaining wall at the HELP SEC boiler pad should be designed to resist lateral pressures due to earth and surcharge loads. The recommended lateral earth pressure for the drained condition is a triangular distribution having an equivalent fluid weight of 60 psf per ft of depth. Lateral pressures from sidewalk and roadway surcharge loads should be added as a uniform soil pressure equal to one-half the vertical pressure applied over the full height of the wall. We recommend that passive soil resistance be omitted in resisting overturning and sliding forces in the design of the retaining walls.

Retaining wall designs must include adequate provisions for drainage (i.e., free draining material and weep holes) to prevent the build up of hydrostatic pressure behind the wall. We recommend using washed gravel or clean crushed stone for the drainage material; weep holes should be spaced no greater than 8 ft on center.

### **Fill Material and Compaction Criteria**

Fill material and compaction equipment to be used to raise grade or to backfill should be free of organic, frozen, and other deleterious materials, and should have a maximum particle size no greater than 4 inches. Imported fill should contain no more than 30% of the material retained on the 3/4 inch sieve. The material passing the 3/4 inch sieve should contain, by weight, no more than 40% passing the No. 100 sieve, or 12% passing the No. 200 sieve. Site material may be used as controlled backfill provided it meets the above-reference criteria. Fill should be placed in uniform 12-inch-thick loose lifts and compacted to at least 95% of the maximum dry density as determined by Modified Proctor tests (ASTM D1557). Water content at the time of compaction should be within a few percentage points of optimum.

Grain size distributions, maximum dry density and optimum water content determinations should be made on representative samples of the proposed fill material. All fill placement and compaction should be subject to special inspection and testing. No fill material should be placed on areas where free water is standing, on frozen subsoil, or on surfaces which have not been approved by the on-site geotechnical engineer. The suitability of on-site material for reuse as backfill should be determined during construction by the Owner's geotechnical engineer.





## LIMITATIONS

The conclusions and recommendations provided in this report are based on subsurface conditions inferred from a limited number of borings and test pits, as well as architectural and structural information provided by Cosentini. Recommendations provided are dependent upon one another and no recommendation should be followed independent of the others.

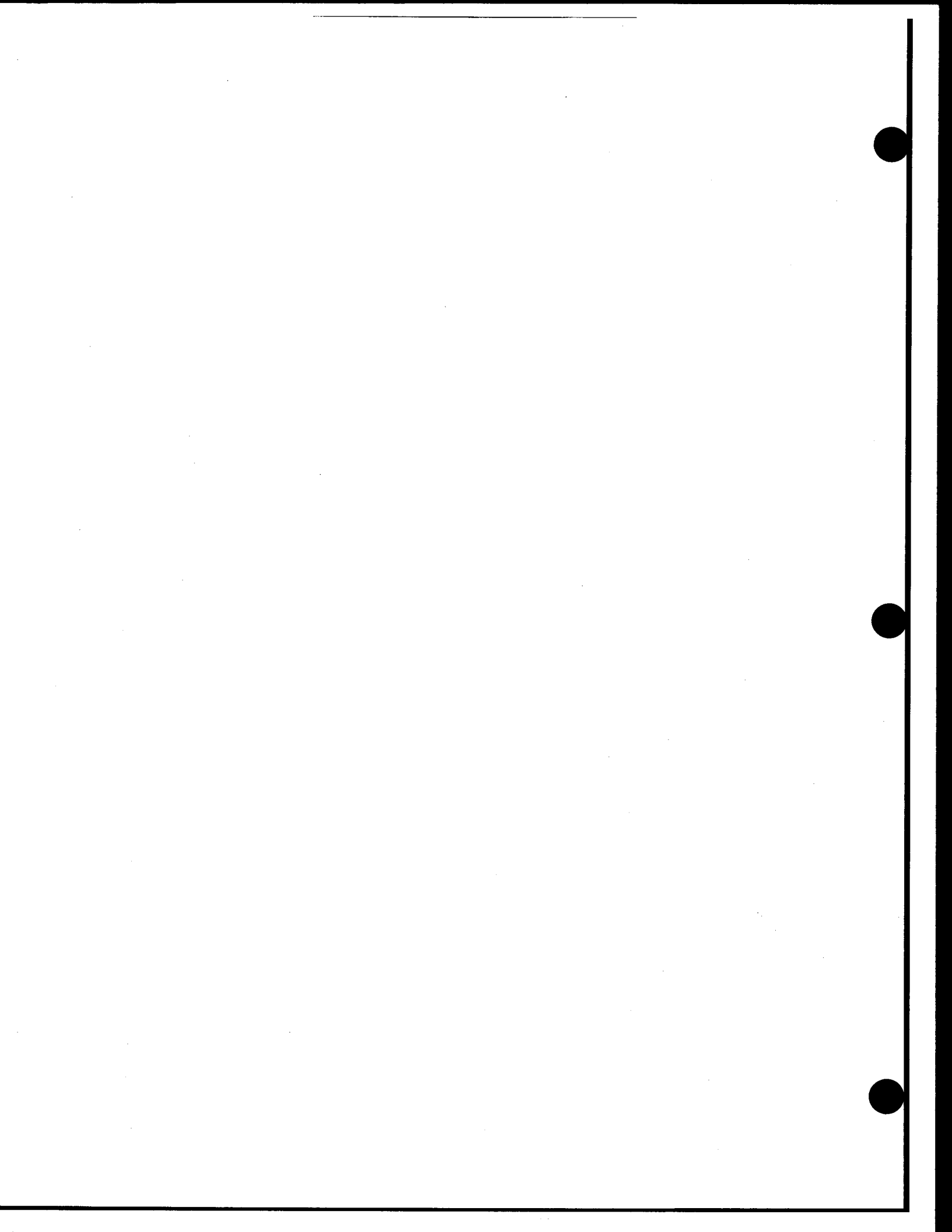
Any proposed changes in structures or their locations should be brought to Langan's attention as soon as possible so that we can determine whether such changes affect our recommendations. Information on subsurface strata and groundwater levels shown on the logs represent conditions encountered only at the locations indicated and at the time of investigation. If different conditions are encountered during construction, they should immediately be brought to Langan's attention for evaluation, as they may affect our recommendations.

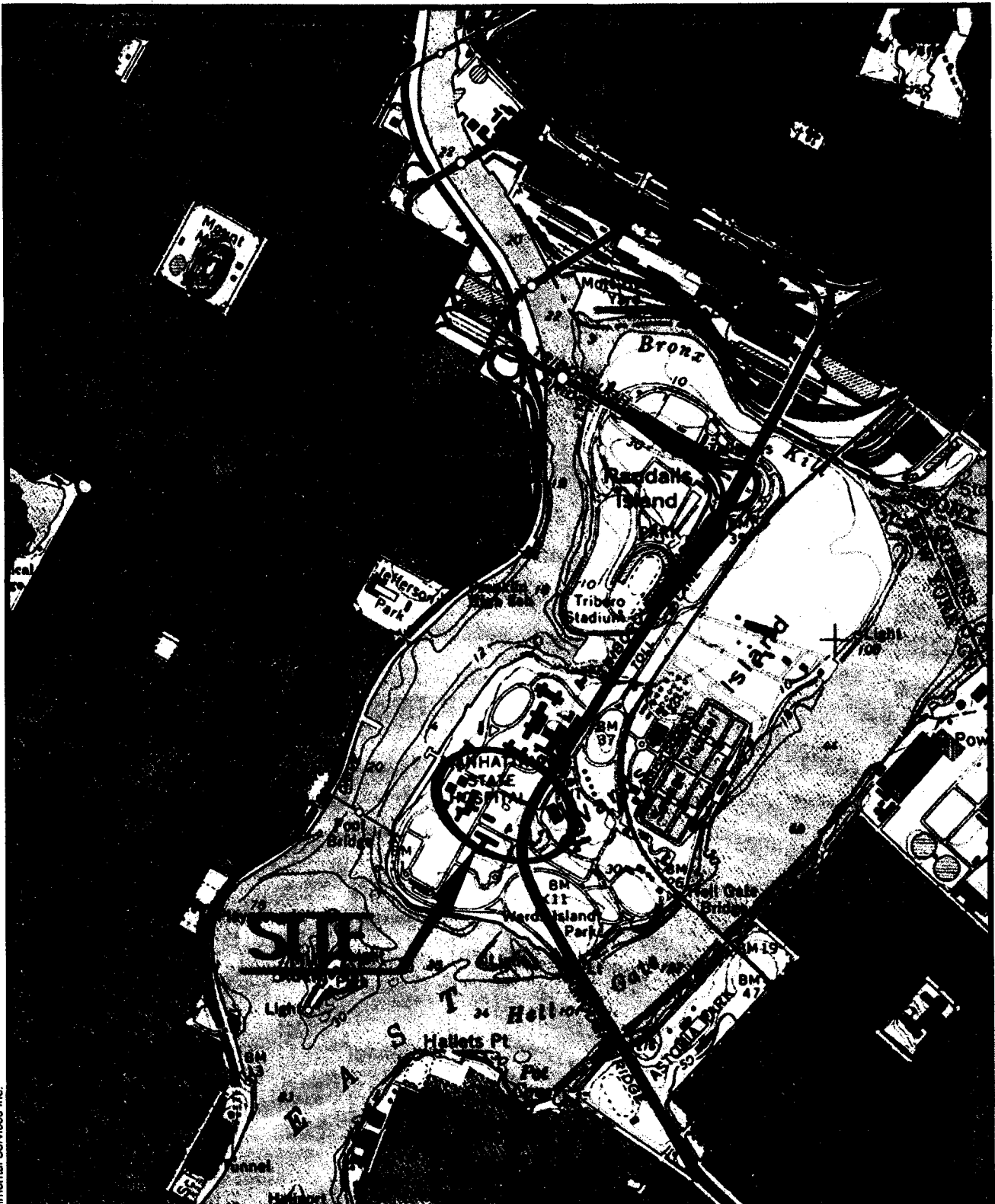
This report has been prepared to assist the Owner, architect and structural engineer in the design process and is only applicable to the design of the specific project identified. The information in this report cannot be utilized or depended on by engineers or contractors who are involved in evaluations or designs of facilities (including underpinning, grouting, stabilization, etc.) on adjacent properties which are beyond the limits of that which is the specific subject of this report.

Environmental issues (such as potentially contaminated soil and groundwater) are outside the scope of this study and should be addressed in a separate study.



## FIGURES





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 Jersey City, N.J. - N.Y. 1967, Photorevised 1981

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# LANGAN

ENGINEERING & ENVIRONMENTAL SERVICES

21 Penn Plaza, 8th Floor New York, NY 10001  
 P: 212.479.5400 F: 212.479.5444  
[www.langan.com](http://www.langan.com)

NEW JERSEY PENNSYLVANIA NEW YORK CONNECTICUT FLORIDA  
 NEVADA VIRGINIA CALIFORNIA

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## WARDS ISLAND BOILER REPLACEMENT

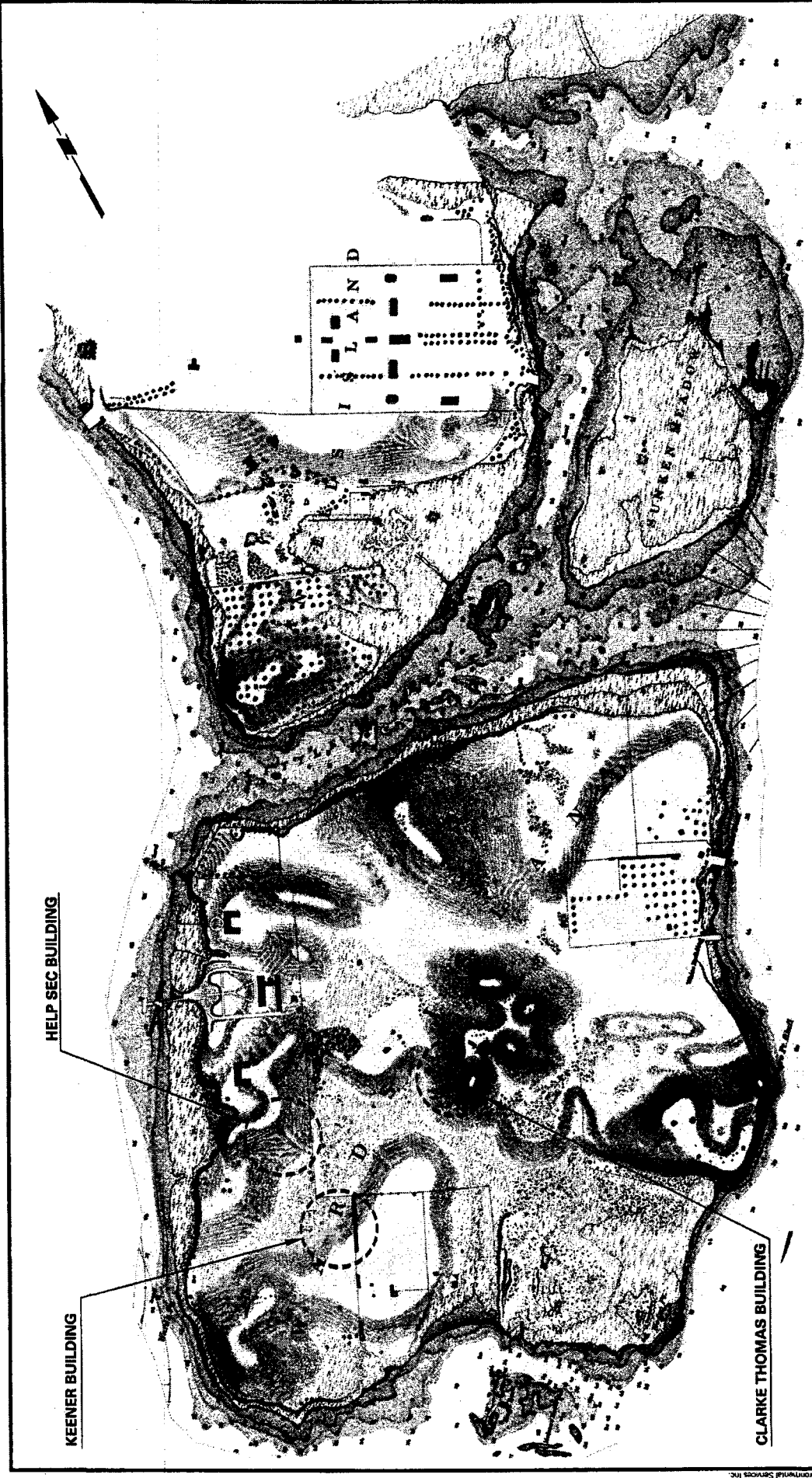
### SITE LOCATION MAP

NEW YORK

NEW YORK

Project No.	Date	Scale	Dep. No.
170205601	08/17/2012	NTS	1





KEENER BUILDING

HELP SEC BUILDING

CLARKE THOMAS BUILDING



ENGINEERING & ENVIRONMENTAL SERVICES  
 21 Penn Plaza, 8th Floor  
 New York, NY 10001  
 P: 212.479.5400  
 www.langan.com  
 NEW YORK, NEW JERSEY, CONNECTICUT, PENNSYLVANIA, CALIFORNIA  
 NJ Certificate of Authorization No. 246A27896A00

WARDS ISLAND BOILER REPLACEMENT

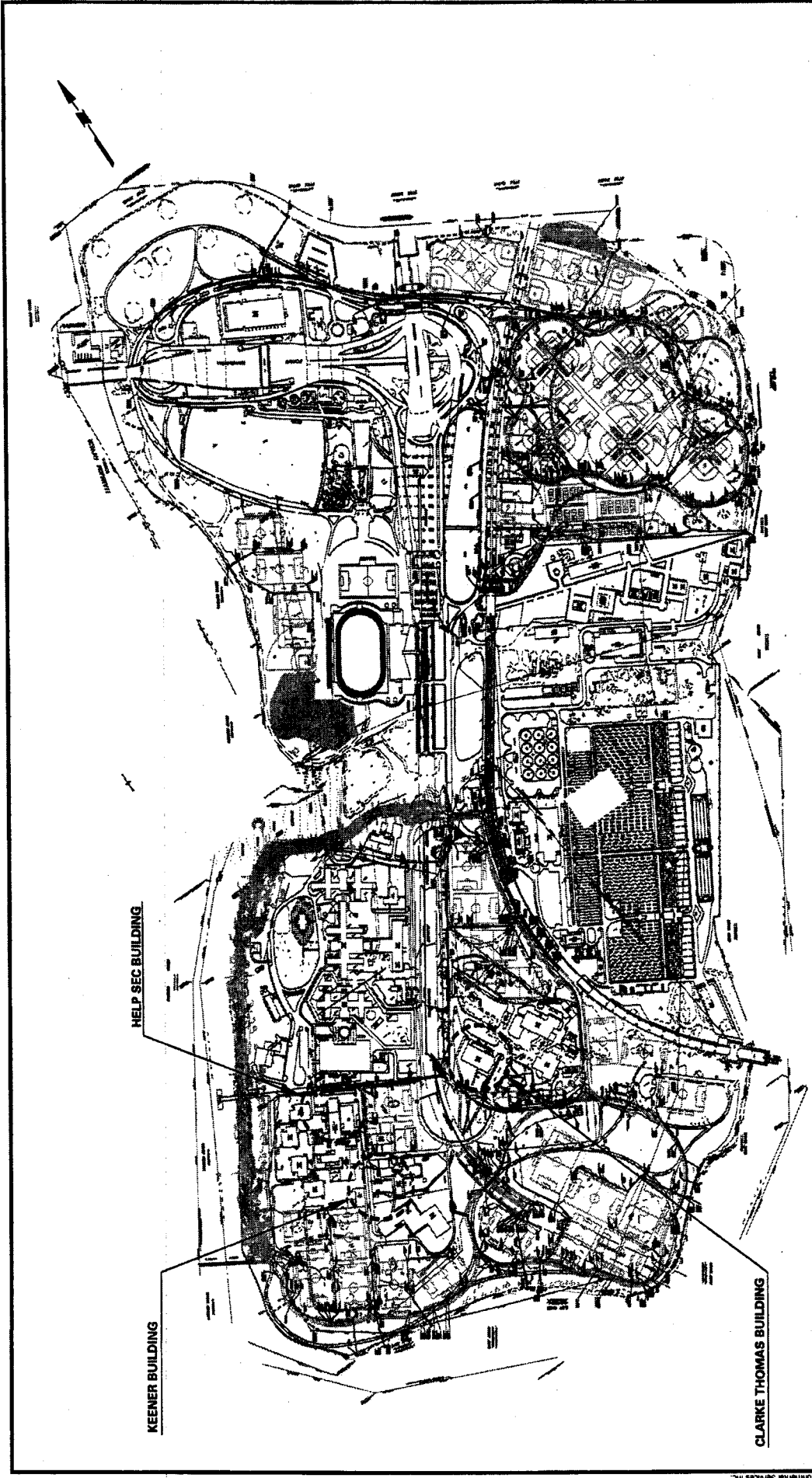
HISTORIC MAP AND SHORELINE

NEW YORK  
 Project No. 170205601  
 Date 08/17/2012  
 Scale NTS  
 Drawing No. 2

NOTE:  
 1. HISTORICAL MAP, DATED 1861.







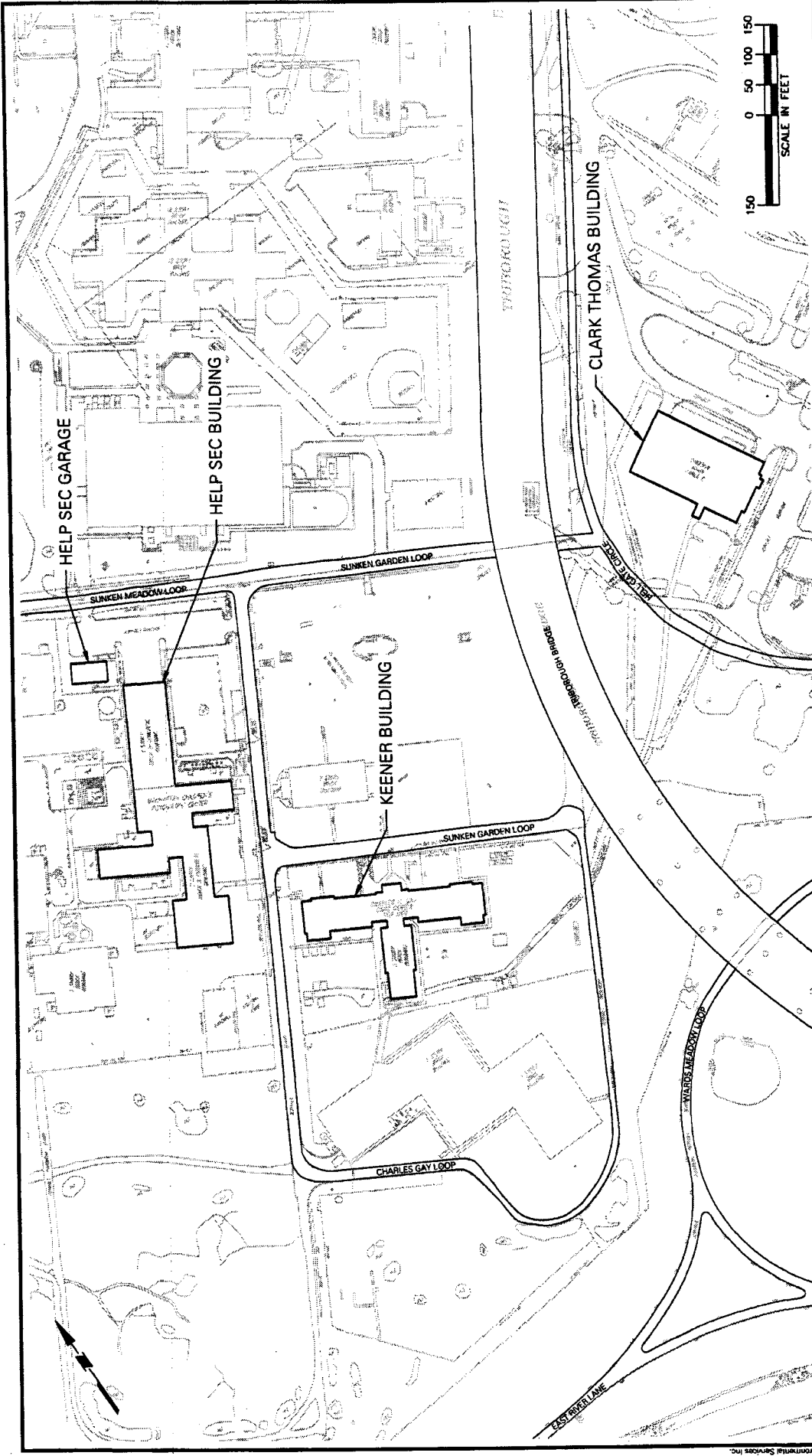
**WARD ISLAND BOILER REPLACEMENT**  
**SITE PLAN**

NEW YORK  
 Project No. 170205601  
 Date 08/17/2012  
 Scale NTS  
 Sheet No. 3

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**NOTE:**  
 1. THE BASE PLAN INDICATING EXISTING FEATURES WAS TAKEN FROM AN UNTITLED FILE DRAWING DATED NOVEMBER 2005.





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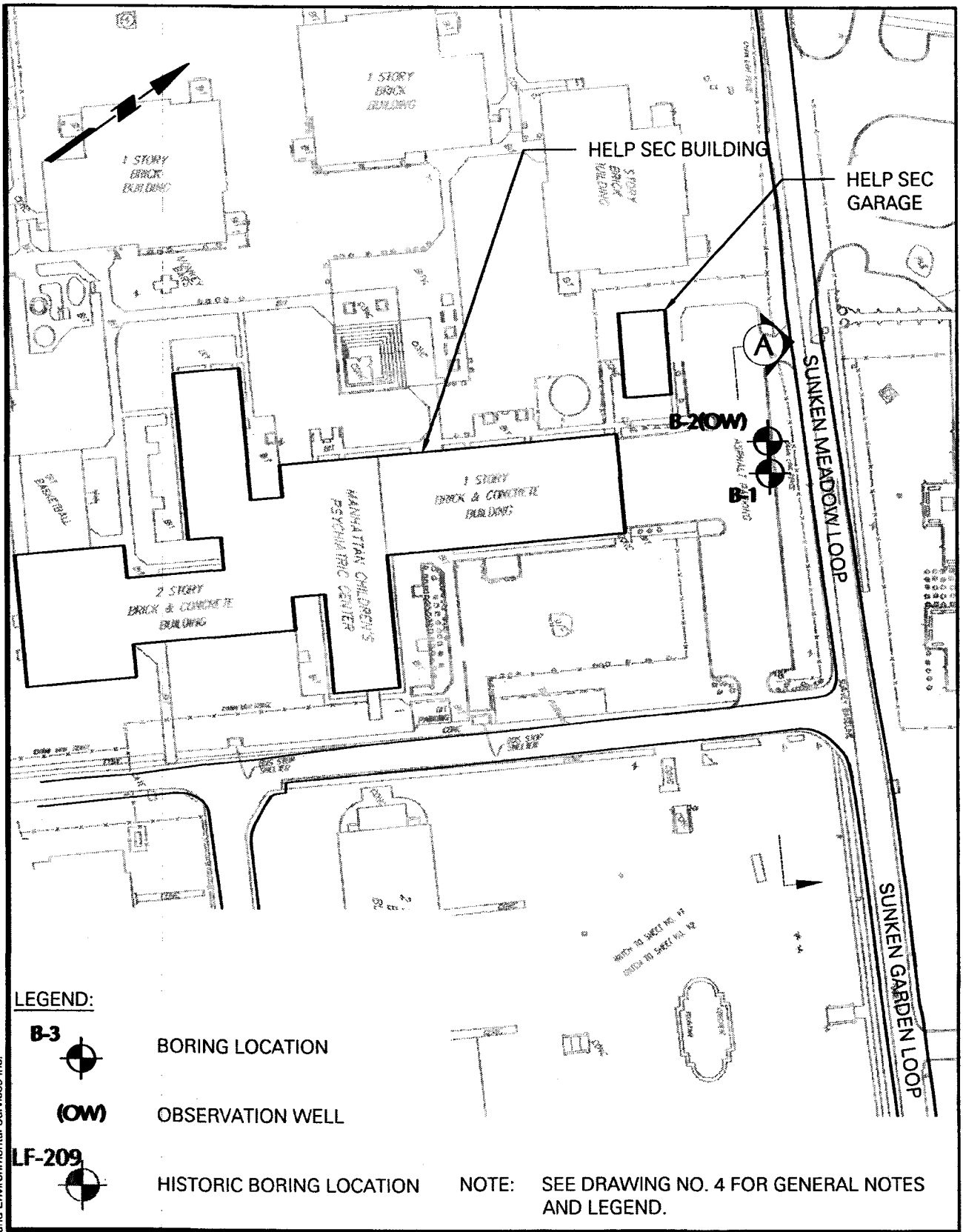
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 CONNECTICUT: 06-00000001  
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 ILLINOIS: 00000001  
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 MICHIGAN: 00000001  
 CALIFORNIA: 00000001  
 NJ Certificate of Authorization No. 240-027899-000

**WARDS ISLAND BOILER REPLACEMENT  
 BUILDING LOCATION PLAN**

NEW YORK  
 Project No. 170205601  
 Date 08/17/2012  
 Scale 1" = 150'  
 Sheet No. 4  
 Draw. No. NEW YORK

NOTES:  
 1. BASE PLAN WAS TAKEN FROM AN UNTITLED FILE DRAWING DATED 30 NOVEMBER 2005.





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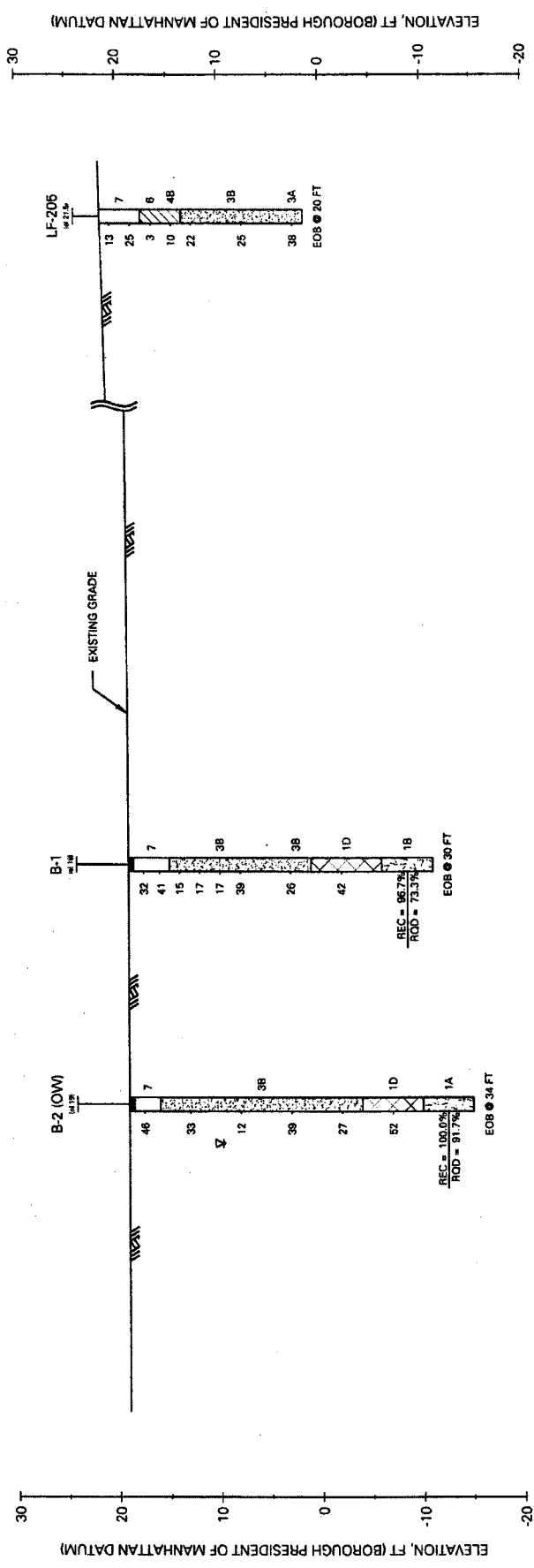
WARDS ISLAND BOILER REPLACEMENT  
**BORING LOCATION PLAN**  
**HELP SEC BUILDING**

NEW YORK NEW YORK

Project No.	Date	Scale	Dwg. No.
170205601	08/17/2012	1"=100'	5



ASPHALT PARKING LOT      APPROXIMATE EXTENT OF PROPOSED BOILER PAD      TOWARDS TRIBOROUGH BRIDGE



**SECTION A-A**



**NOTES:**

- SEE DRAWING NO. 4 FOR GENERAL NOTES.
- SEE DRAWING LS-1 FOR BORING KEY AND LEGEND.



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WARDS ISLAND BOILER REPLACEMENT

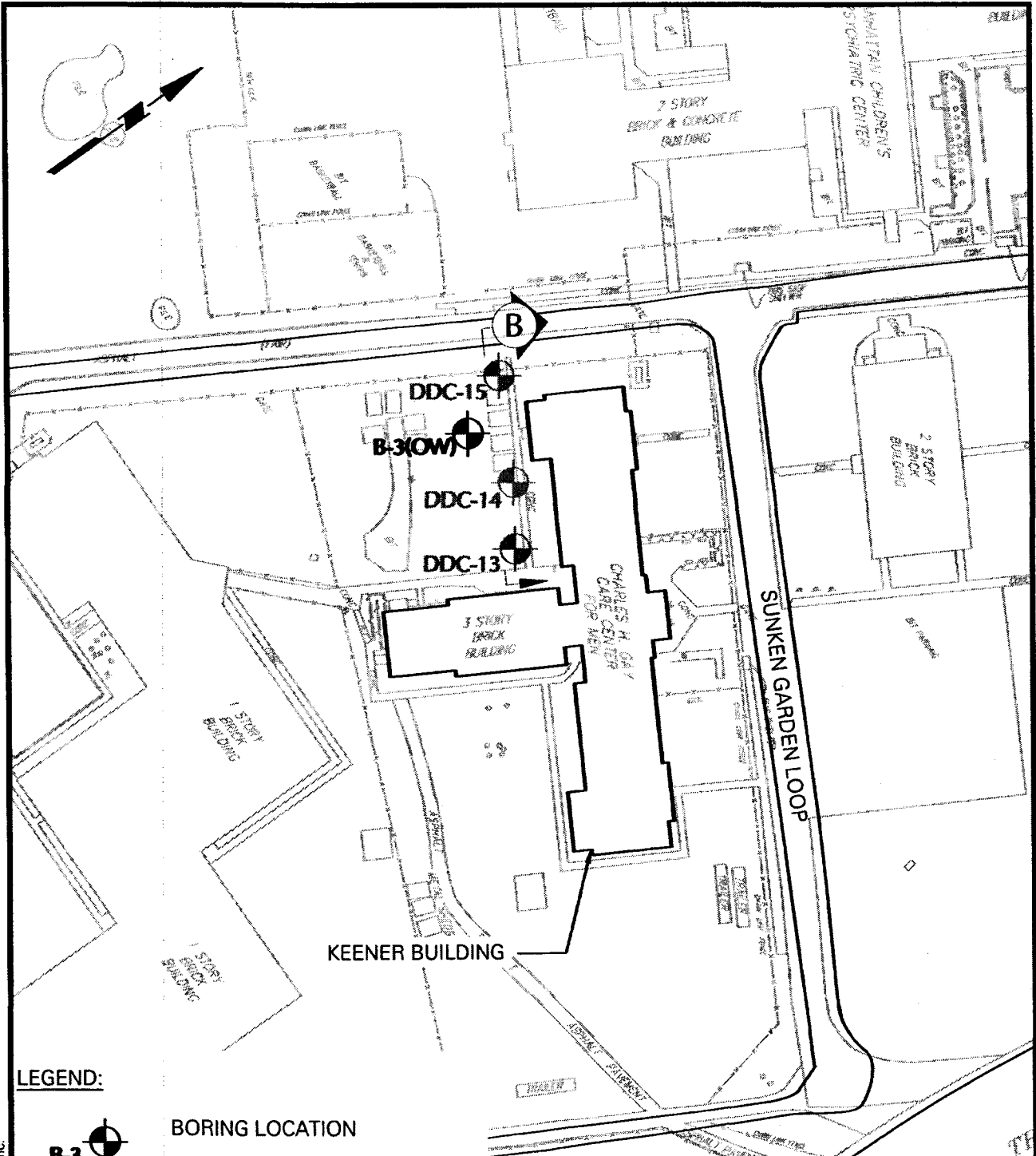
**SUBSURFACE PROFILE A**

NEW YORK      NEW YORK




Project No: 170205601      Date: 08/17/2012      Scale: 1" = 10'      Sheet No: 6







**LEGEND:**

-  BORING LOCATION
-  OBSERVATION WELL
-  HISTORIC BORING LOCATION

NOTE: SEE DRAWING NO. 4 FOR GENERAL NOTES AND LEGEND.

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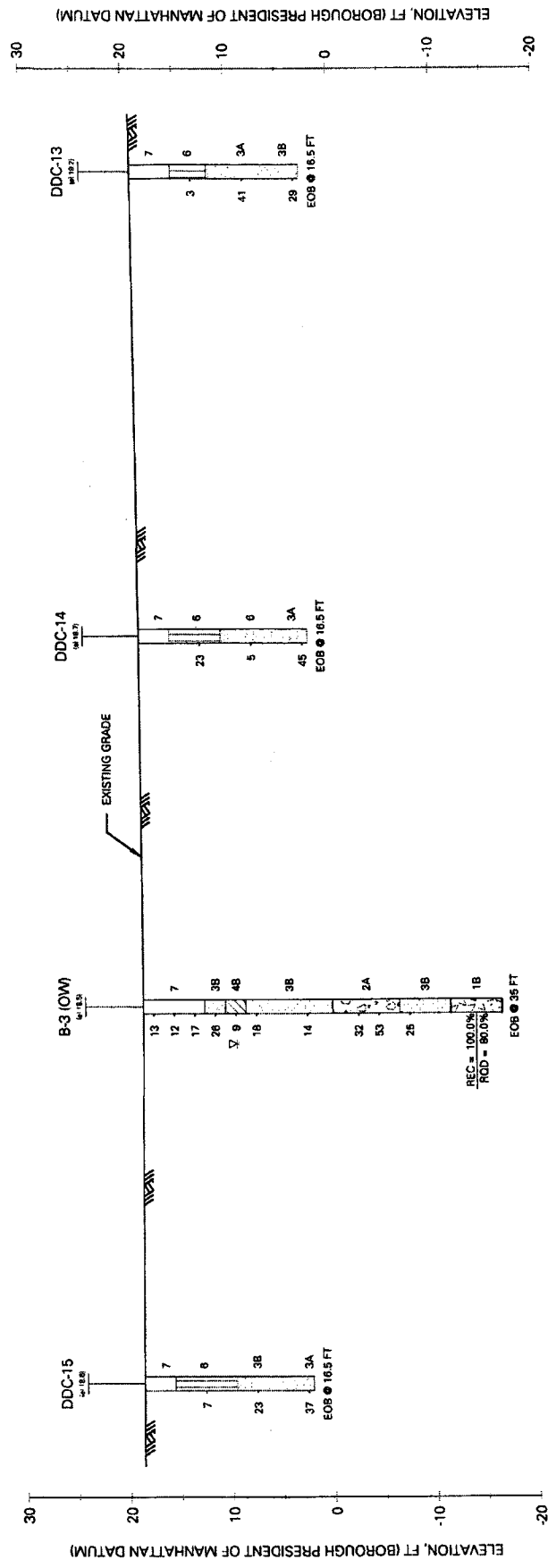
**WARDS ISLAND BOILER REPLACEMENT  
BORING LOCATION PLAN  
KEENER BUILDING**

NEW YORK NEW YORK

Project No. 170205601	Date 08/17/2012	Scale 1" = 100'	Dwg. No. 7
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TOWARDS SUNKEN GARDEN LOOP | APPROXIMATE EXTENT OF PROPOSED BOILER PAD | TOWARDS KEENER BUILDING



**SECTION B-B**



**NOTES:**

- SEE DRAWING NO. 4 FOR GENERAL NOTES.
- SEE DRAWING LS-1 FOR BORING KEY AND LEGEND.



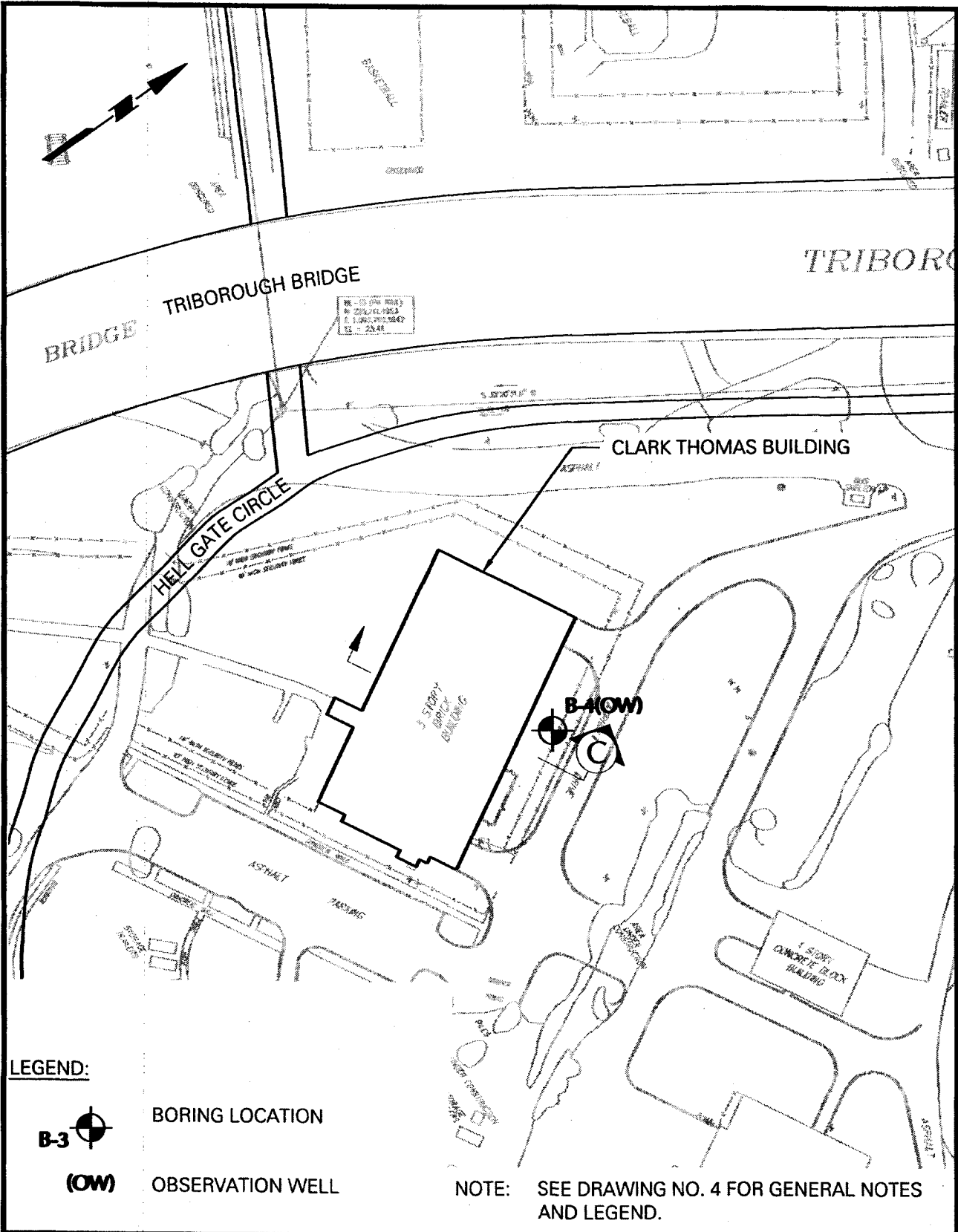
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WARDS ISLAND BOILER REPLACEMENT

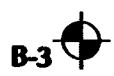
**SUBSURFACE PROFILE B**

NEW YORK  
Project No. 170205601  
Date 08/17/2012  
Scale 1" = 10'  
Sheet 8 of 8  
NEW YORK  
Date 07/2007





**LEGEND:**



BORING LOCATION



OBSERVATION WELL

NOTE: SEE DRAWING NO. 4 FOR GENERAL NOTES AND LEGEND.

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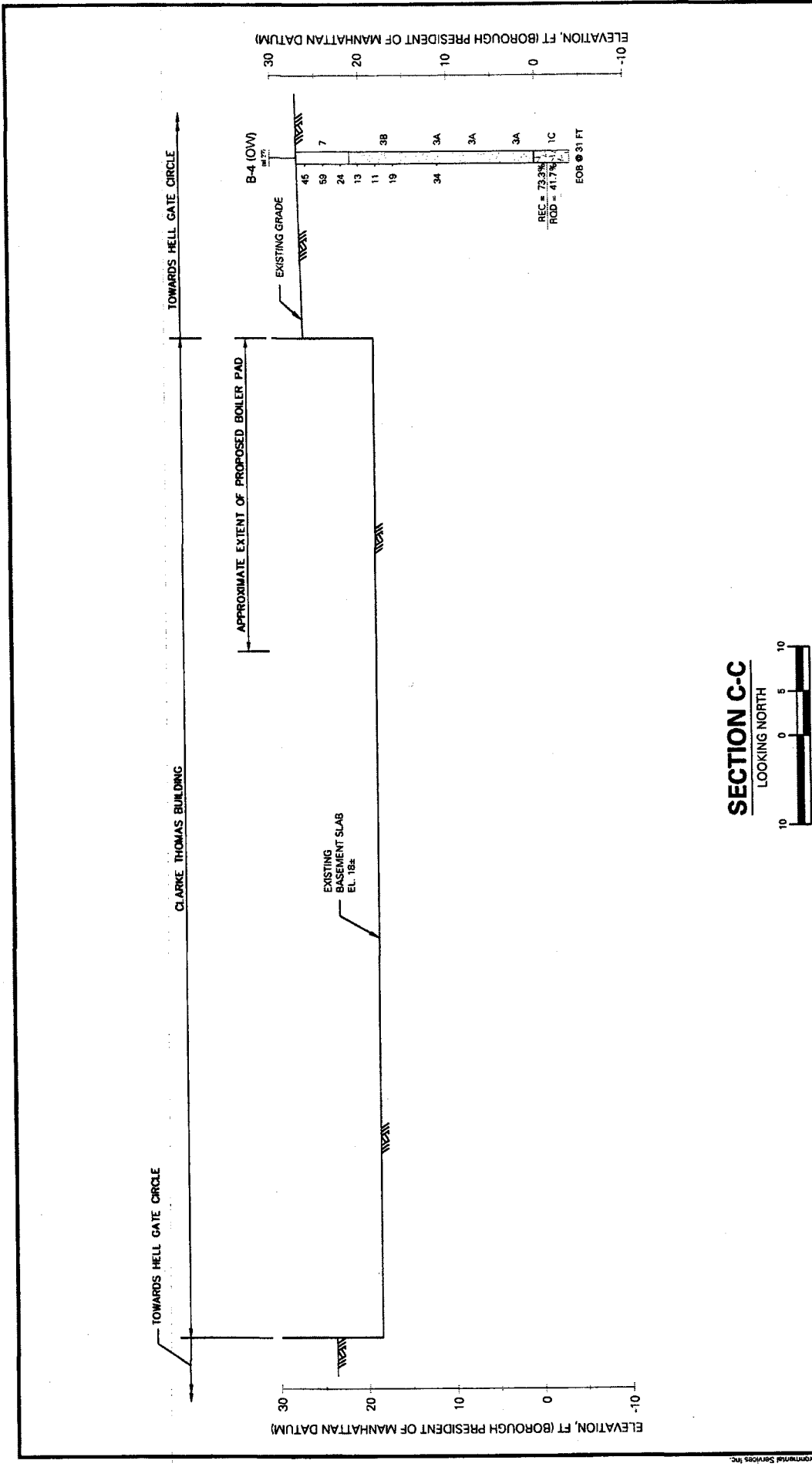
**WARDS ISLAND BOILER REPLACEMENT  
 BORING LOCATION PLAN  
 CLARKE THOMAS BUILDING**

NEW YORK

NEW YORK

Project No. 170205601	Date 08/17/2012	Scale 1" = 100'	Dwg. No. 9
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**SECTION C-C**

LOOKING NORTH



**NOTES:**

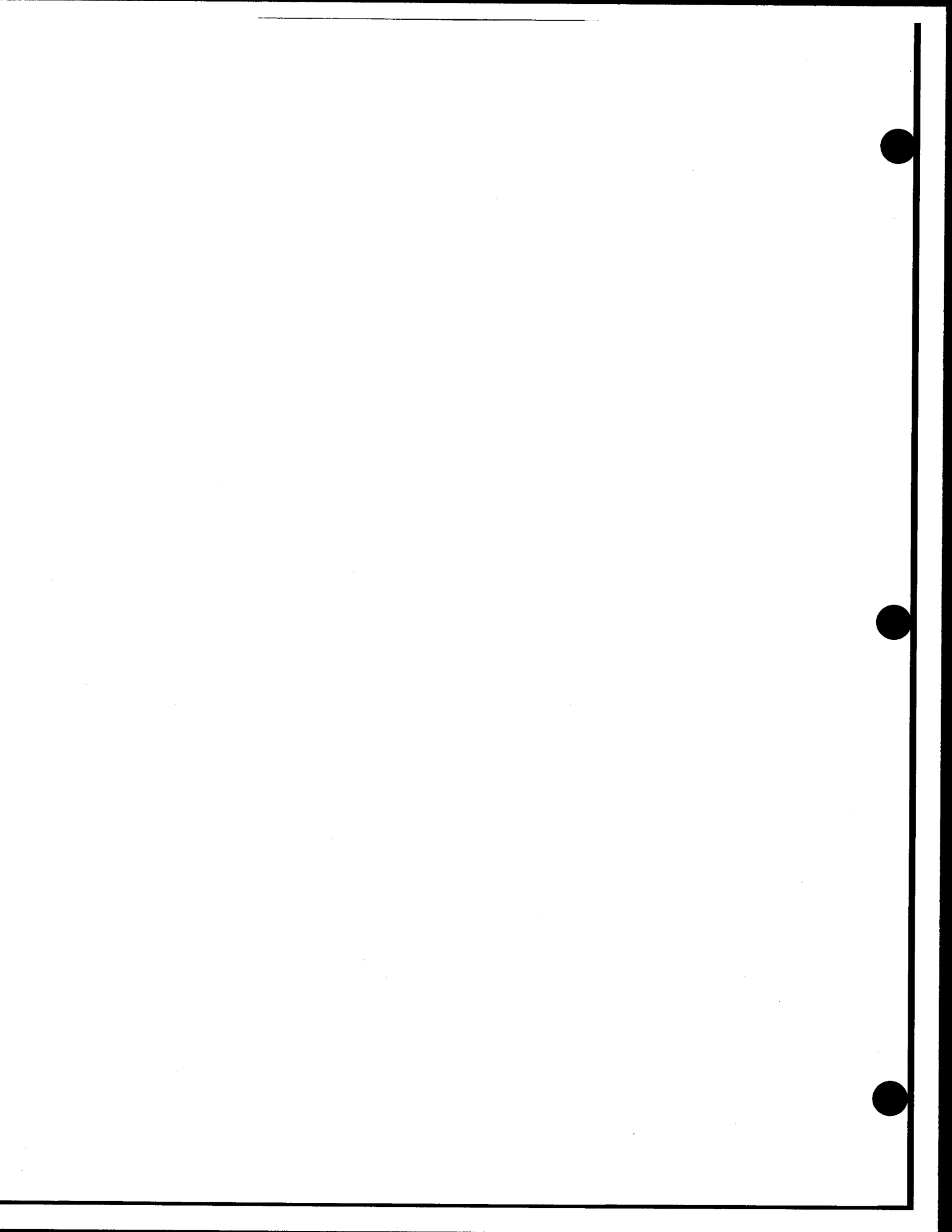
1. SEE DRAWING NO. 4 FOR GENERAL NOTES.
2. SEE DRAWING LS-1 FOR BORING KEY AND LEGEND.



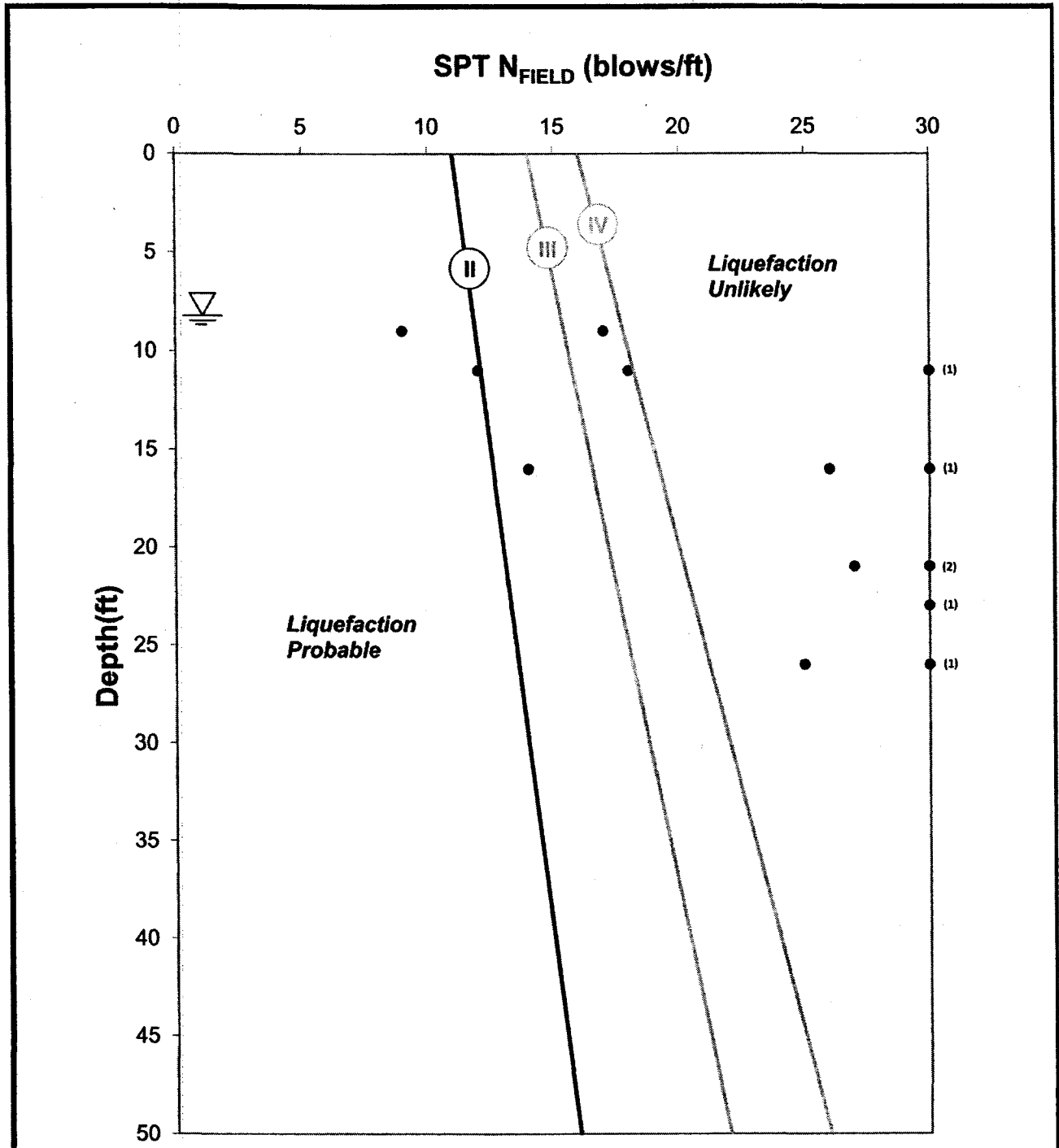
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**WARDS ISLAND BOILER REPLACEMENT  
 SUBSURFACE PROFILE C**

NEW YORK  
 Project No. 170205601  
 Date 08/17/2012  
 Scale 1" = 10'  
 Drawn By: [blank]  
 Check By: [blank]  
 Date: [blank]  
 Drawn No. 10







**NOTES:**

1. N-Values greater than 30 blows/ft are plotted as 30 blows/ft.
2. Number in parenthesis indicates the amount of N-Values greater than 30 blows/ft.

**SOURCE:**

2008 New York City Building Code

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NJ Certificate of Authorization No: 24GA27996400

**WARDS ISLAND BOILER REPLACEMENT  
 NYC BUILDING CODE  
 LIQUEFACTION SCREENING**

NEW YORK NEW YORK

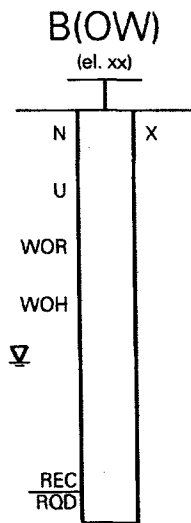
Project No. 170205601	Date 08/17/2012	Scale NTS	Dwg. No. 11
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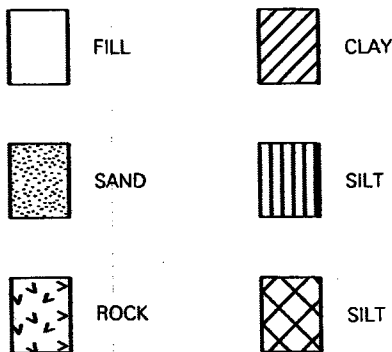


Explanation



- B BORING IDENTIFICATION
- (OW) GROUNDWATER OBSERVATION WELL
- EL GROUND SURFACE ELEVATION AT TIME OF BORING
- N STANDARD PENETRATION RESISTANCE; NUMBER OF BLOWS OF A 140 LB. HAMMER FREE FALLING 30 IN. TO DRIVE A 2 IN O.D. SPLIT SPOON SAMPLER 12 IN. AFTER 6 INCHES OF INITIAL PENETRATION.
- X NEW YORK CITY BUILDING CODE CLASSIFICATION
- U UNDISTURBED SAMPLE
- WOR 2 FT PENETRATION OF THE SPLIT SPOON SAMPLER UNDER THE OWN WEIGHT OF RODS
- WOH 2 FT PENETRATION OF THE SPLIT SPOON SAMPLER UNDER THE STATIC WEIGHT OF THE DRIVING HAMMER
- ▽ MEASURED GROUNDWATER LEVEL
- REC (LENGTH OF ROCK RETRIEVED)/ (LENGTH OF ROCK CORED) \* 100 %
- ROD ROCK QUALITY DESIGNATION (LENGTH OF ROCK PIECES 4 INCHES OR LONGER)/ (LENGTH OF ROCK CORED) \* 100 %

Legend



NEW YORK CITY BUILDING CODE CLASSIFICATION NUMBER

- CLASS 1 BEDROCK
- CLASS 1a HARD SOUND ROCK - gneiss, diabase, schist
- CLASS 1b MEDIUM HARD ROCK - marble, serpentine
- CLASS 1c INTERMEDIATE ROCK - shale, sandstone
- CLASS 1d SOFT ROCK - weathered rock
- CLASS 2 SANDY GRAVEL AND GRAVEL (GW, GP)
- CLASS 2a DENSE SANDY GRAVEL AND GRAVEL
- CLASS 2b MEDIUM DENSE SANDY GRAVEL AND GRAVEL
- CLASS 3 GRANULAR SOILS (GC, GM, SW, SP, SM, and SC)
- CLASS 3a DENSE GRANULAR SOILS
- CLASS 3b MEDIUM DENSE GRANULAR SOILS
- CLASS 4 CLAYS (SC, CL, and CH)
- CLASS 4a HARD CLAYS
- CLASS 4b STIFF CLAYS
- CLASS 4c MEDIUM STIFF CLAYS
- CLASS 5 SILTS AND SILTY SOILS (ML AND MH)
- CLASS 5a DENSE SILTS AND SILTY SOILS
- CLASS 5b MEDIUM DENSE SILTS AND SILTY SOILS
- CLASS 6 Organic Silts, Organic Clays, Peats, Soft Clays, Loose Granular Soils and Varved Silts
- CLASS 7 Controlled and Uncontrolled Fills

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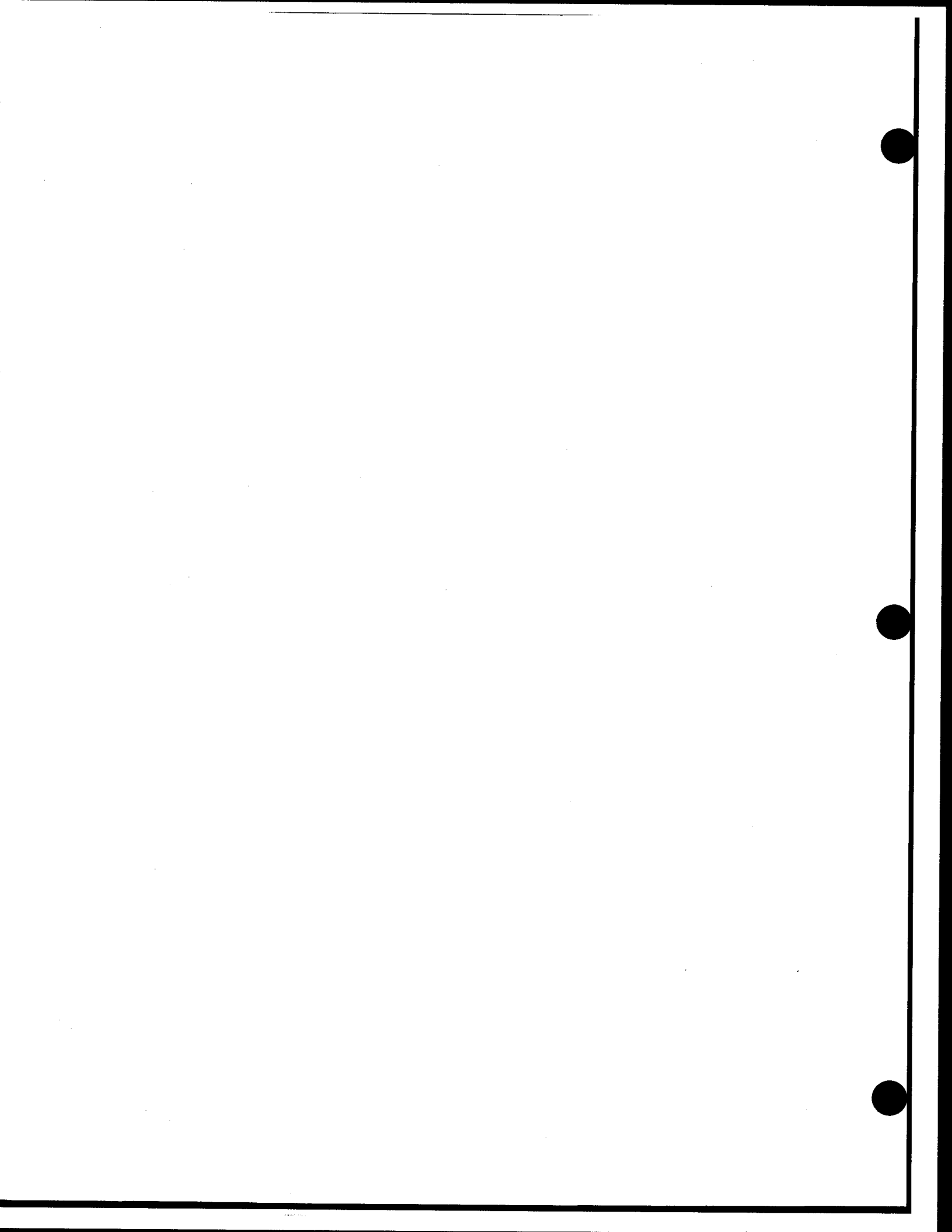
WARDS ISLAND BOILER REPLACEMENT

**BORING KEY AND LEGEND**

NEW YORK

NEW YORK

Project No.	Date	Scale	Dwg. No.
170205601	08/17/2012	NTS	LS-1



## **APPENDIX A**

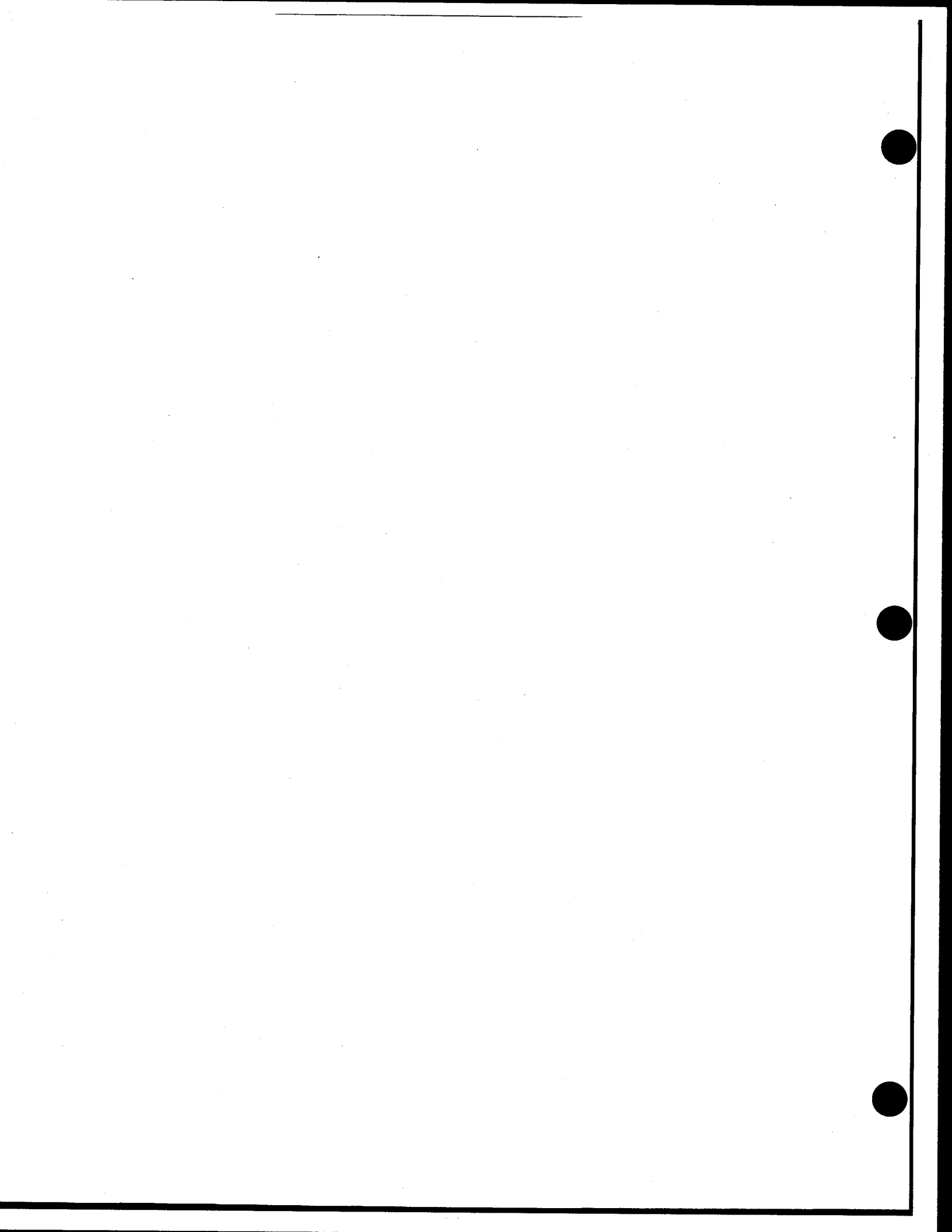




Project Wards Island Boilers				Project No. 170205601				
Location Wards Island, N.Y.				Elevation and Datum Approx. 19 (BPMD)				
Drilling Company Warren George Inc.				Date Started 8/3/12		Date Finished 8/6/12		
Drilling Equipment B-53 Truck Mounted Rig				Completion Depth 30 ft		Rock Depth 25 ft		
Size and Type of Bit 3 7/8" Tricone Roller Bit				Number of Samples		Disturbed 9	Undisturbed 0	Core 1
Casing Diameter (in) 4" I.D. Flush Joint Steel		Casing Depth (ft) 24		Water Level (ft.) First $\nabla$ -		Completion $\nabla$ -	24 HR. $\nabla$ -	
Casing Hammer Safety		Weight (lbs) 140	Drop (in) 30	Drilling Foreman Sammy Colon				
Sampler 2" Split Spoon				Inspecting Engineer Rebecca Pinckheard				
Sampler Hammer Safety		Weight (lbs) 140	Drop (in) 30					

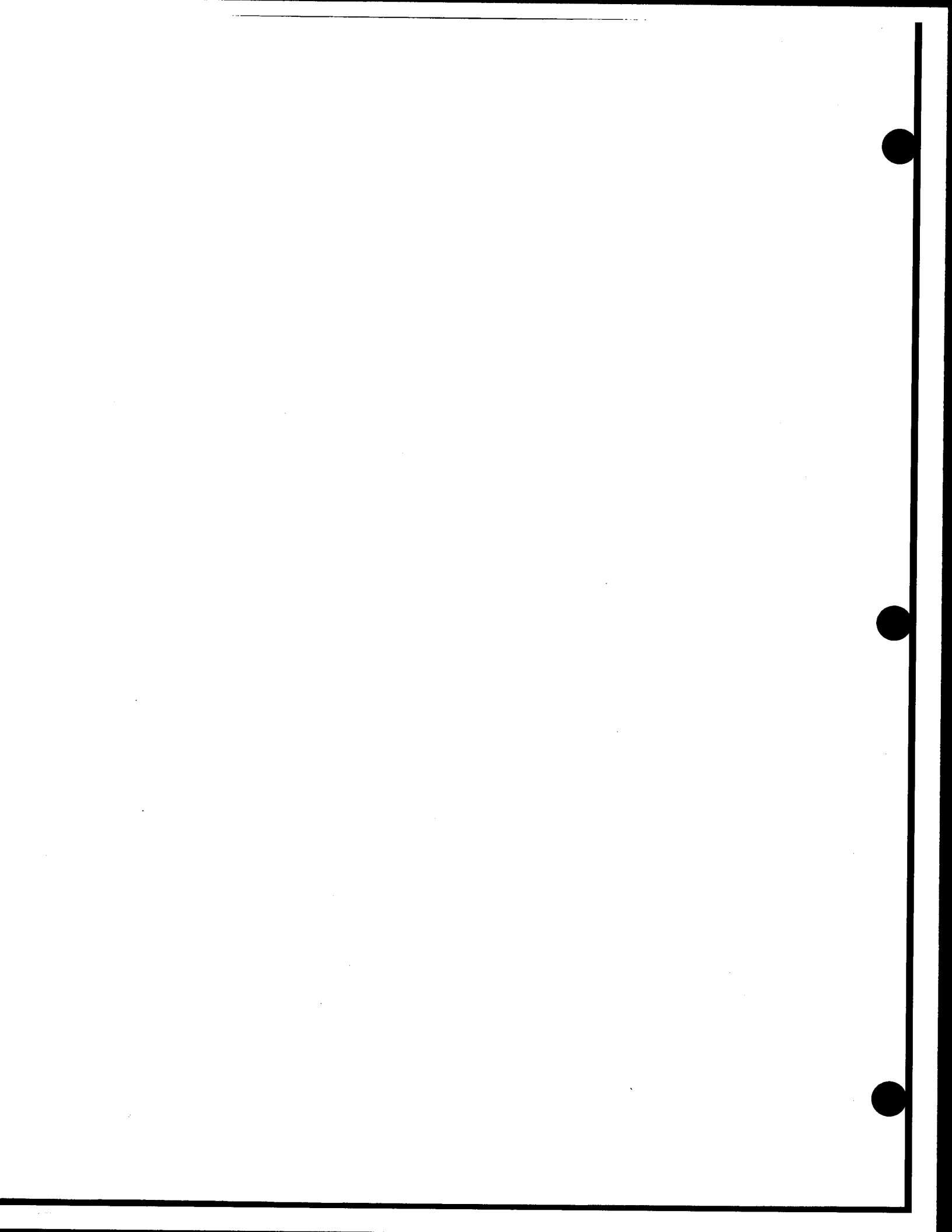
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MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Casing blow ft / Coring min ft	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
						Number	Type	Recon. (in)	Penetr. resist. BL/6in		N-Value (Blows/ft)
	+19.0		ASPHALT PAVING		0						<p>8/3/2012 10:45 AM: Set up equipment at borehole location B-1 Equipment broke down (2 hours) 12:51 PM: Drill through asphalt 12:54 PM: Take S-1 0'-2' Take S-2 2'-4'</p> <p>1:08 PM: Advance 4" casing to a depth of 4' Wash out borehole to 4', wash is dark brown 1:30 PM: Take S-3 4'-6' Take S-4 6'-8'</p> <p>1:38PM: Wash out borehole to 8' 1:49 PM: Take S-5 8'-10' Take S-6 10'-12' 1:56PM: Advance 4" casing to a dept of 8'</p> <p>Drill to 15' Wash is light brown Hard drilling at 14' Drill cuttings indicate rock fragments/boulders 2:17PM: Take S-7 15'-17'</p>
	+18.5		Brown f-m SAND, trace silt, trace fine gravel [FILL] (Class 7)		1	S-1	SS	9	15	32	
		Class 7	No recovery Red coarse gravel in split spoon tip, brick	160	2	S-2	SS	0	15	41	
	+15.0		Brown m-c SAND, trace silt [SP-SM] (Class 3b)		3	S-3	SS	13	6	15	
		Class 3b & 3a	Brown f-c SAND, trace silt [SP] (Class 3b)	SPIN	4	S-4	SS	14	7	17	
			Brown f-c SAND, trace silt [SP] (Class 3b)		5	S-5	SS	17	8	17	
			Brown f-c SAND, trace silt, some fine gravel [SM] (Class 3a) Gravel fragments indicate coarse gravel		6	S-6	SS	14	14	39	
					7				10		
					8				10		
					9				8		
					10				9		
					11				9		
					12				24		
					13				25		
	+5.0		OBSTRUCTION		14						
	+4.0		Brown f-c SAND, trace silt [SP] (Class 3b)		15	S-7	SS	16	14	26	
		Class 3b			16				13		
					17				13		
					18				14		
	+1.0				19						
		Class 1d			20						



Project		Project No.									
Wards Island Boilers		170205601									
Location		Elevation and Datum									
Wards Island, N.Y.		Approx. 19 (BPMD)									
MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Casing blws/ft Coring min/ft	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
						Number	Type	Recov. (in)	Penetr. resist BL/6in		N-Value (Blows/ft)
[Cross-hatched pattern]	-6.0	Class 1d	DECOMPOSED ROCK (Class 1d)	SPIN	20						2:30PM: Drill to 20' Rig chatter at 18' Smooth drilling at 19' Wash is light brown 2:49PM: Take S-8 20'-22'
					21	S-8	SS	12	17	42	
[V-shaped pattern]	-11.0	Class 1b	Black/white/gray/pink, coarse grained, slightly fractured to sound, slightly weathered PEGMATITE	5:00	22						3:00 PM: Drill to 25' Rig chatter and hard drilling to 25' Wash is light brown 3:20 PM: end of the day 8/6/2012 7:00 AM: Langan on site 7:30 AM: WGI on site 7:50 AM: Drop/spin 3" casing to a depth of 24' At 24' wash changed from brown to light brown gray 8:25 AM: Take S-9 25'-27' Refusal of split spoon 50/0, rock fragments in split spoon tip Set up NX core barrel 8:37 AM: Begin 5' core run Wash is light gray/white Driller increased spin of drill between 28' and 30' Core barrel advanced swiftly between 29'-10" to 30' 8:56 AM: End of run 9:23 AM: Pull casing and backfill borehole
					23						
			End of boring at 30'	4:00	24						
				4:00	25						
				4:00	26						
				4:00	27						
				3:00	28	C-1	NX CORE	REC=58"/60" =97%	RQD=44"/60" =73%		
				3:00	29						
				2:00	30						
					31						
					32						
					33						
					34						
					35						
					36						
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					41						
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					45						

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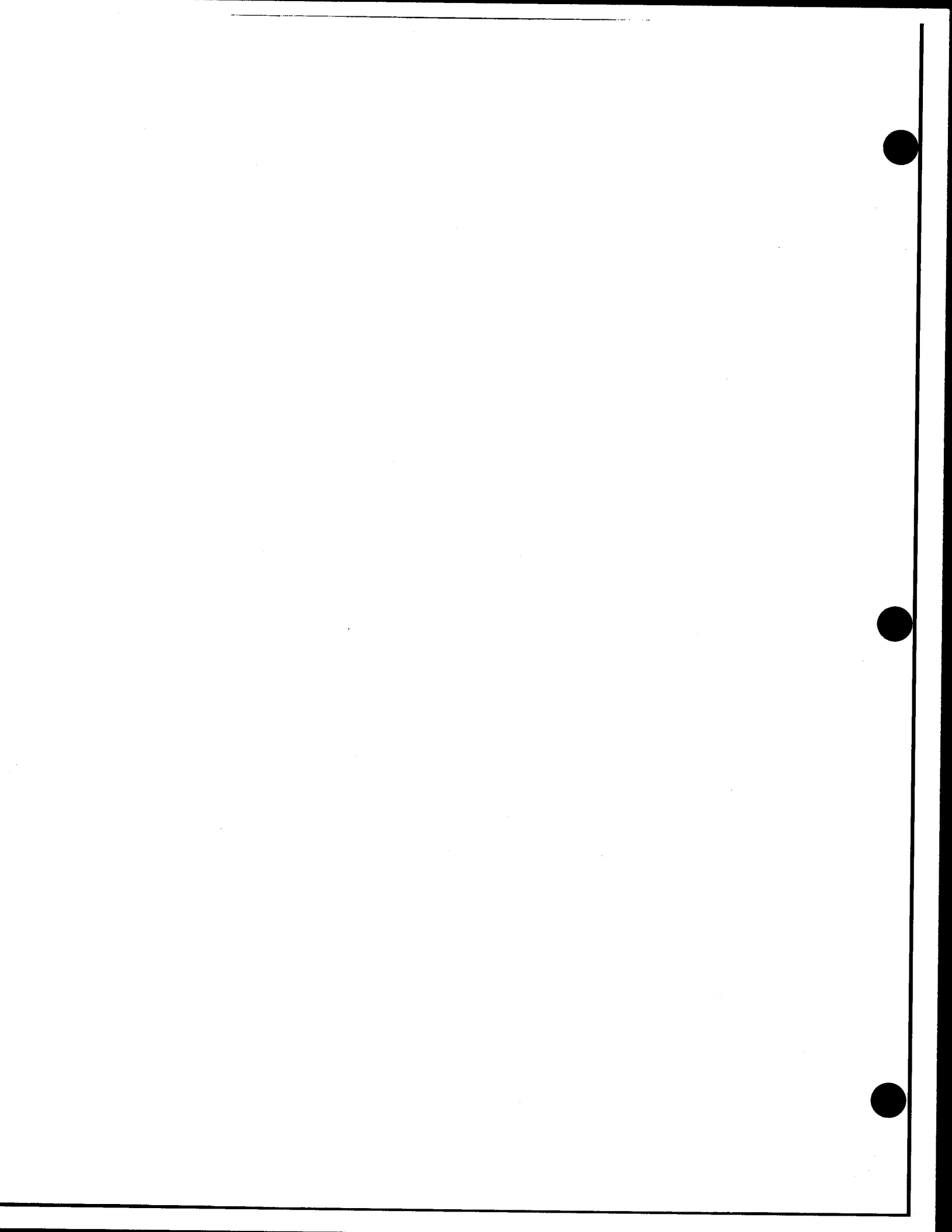


Project Wards Island Boilers		Project No. 170205601	
Location Wards Island, N.Y.		Elevation and Datum Approx. 19 (BPMD)	
Drilling Company Warren George Inc.		Date Started 8/6/12	Date Finished 8/6/12
Drilling Equipment B-53 Truck Mounted Rig		Completion Depth 34 ft	Rock Depth 29 ft
Size and Type of Bit 3 7/8" Tricone Roller Bit		Number of Samples Disturbed 6 Undisturbed 0 Core 1	
Casing Diameter (in) 4" I.D. Flush Joint Steel	Casing Depth (ft) 9	Water Level (ft.) First $\nabla$ 10.3 Completion $\nabla$ 10.5 24 HR. $\nabla$ 10.9	
Casing Hammer Safety	Weight (lbs) 140	Drop (in) 30	Drilling Foreman Eddie Fontanez
Sampler 2" Split Spoon			Inspecting Engineer Rebecca Pinckheard
Sampler Hammer Safety	Weight (lbs) 140	Drop (in) 30	

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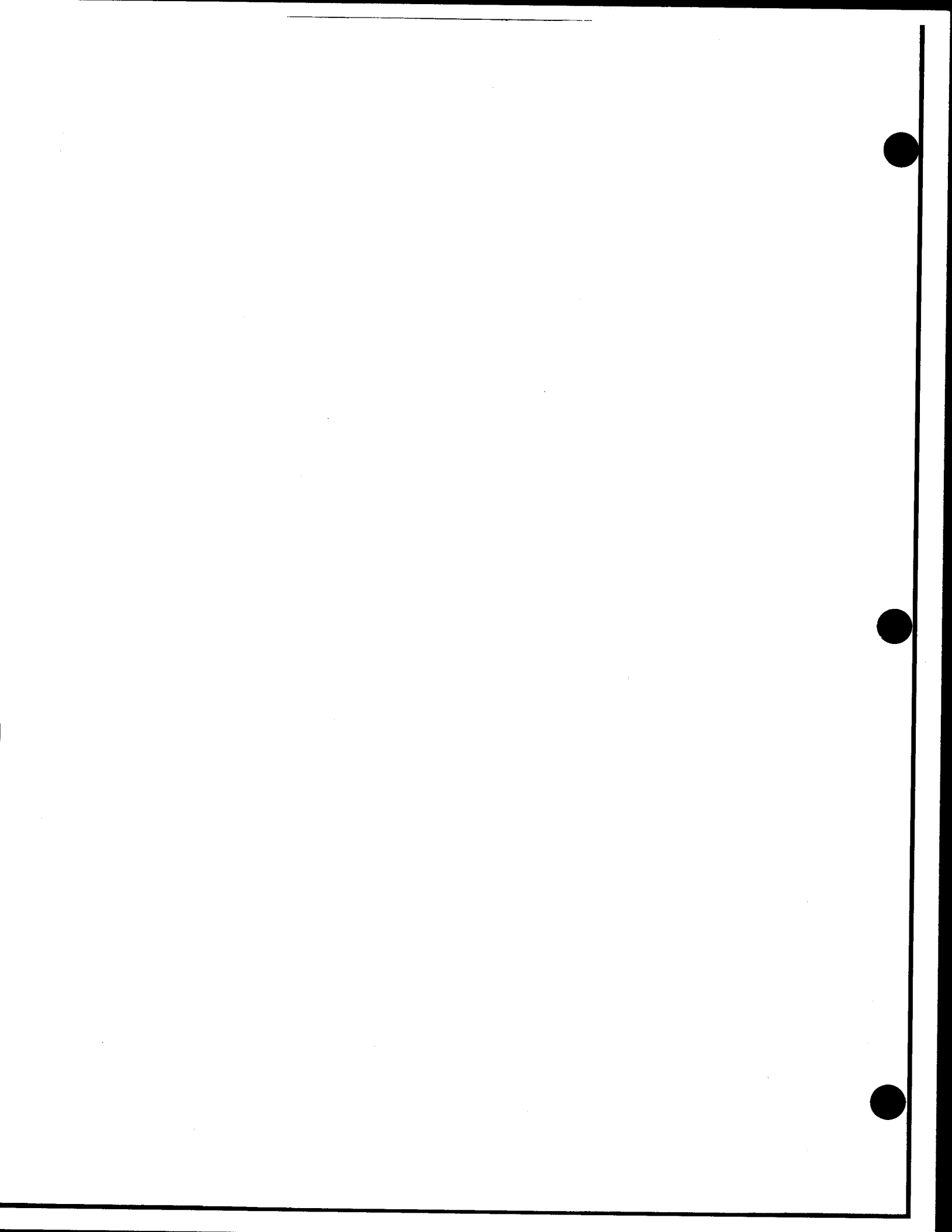
MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Coring min/ft	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
						Number	Type	Recov. (in)	Penetr. resist. BU/ft		N-Value (Blows/ft)
	+19.0		ASPHALT		0						
	+18.5	Class 7	Brown f-m SAND, some silt, trace fine gravel [FILL] (Class 7)		1	S-1	SS	14	16	23	46
	+16.0	Class 3a & 3b	Brown f-c SAND, trace silt [SP] (Class 3a)		2				23	19	
			Brown f-c SAND, trace silt [SP] (Class 3a)		3						
			Brown f-c SAND, trace silt [SP] (Class 3a)		4						
			Brown f-c SAND, trace silt [SP] (Class 3a)		5						
			Brown f-c SAND, trace silt [SP] (Class 3a)		6	S-2	SS	11	6	17	33
			Brown f-c SAND, trace silt [SP] (Class 3a)		7				16	24	
			Brown f-c SAND, trace silt [SP] (Class 3a)		8						
			Brown f-c SAND, trace silt [SP] (Class 3a)		9						
			Brown f-c SAND, trace silt [SP] (Class 3a)		10						
			Brown f-c SAND, trace silt [SP] (Class 3a)		11	S-3	SS	10	3	5	12
			Brown f-c SAND, trace silt [SP] (Class 3a)		12				7	8	
			Brown f-c SAND, trace silt [SP] (Class 3a)		13						
			Brown f-c SAND, trace silt [SP] (Class 3a)		14						
			Brown f-c SAND, trace silt [SP] (Class 3a)		15						
			Brown f-c SAND, trace silt [SP] (Class 3a)		16	S-4	SS	12	19	19	39
			Brown f-c SAND, trace silt [SP] (Class 3a)		17				20	21	
			Brown f-c SAND, trace silt [SP] (Class 3a)		18						
			Brown f-c SAND, trace silt [SP] (Class 3a)		19						
			Brown f-c SAND, trace silt [SP] (Class 3a)		20						

PUSH



Project			Project No.							
Wards Island Boilers			170205601							
Location			Elevation and Datum							
Wards Island, N.Y.			Approx. 19 (BPMD)							
MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Coring min/ft	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
					Depth Scale	Number	Type	Recov. (in)		Penetr. resist. BL/6in
[Symbol: Dotted pattern]	-4.0	Class 3a & 3b	Brown f-c SAND, some fine gravel, some silt [SM] (Class 3b)	20	S-5	SS	12	9	27	Drill to 20' Wash is brown Rig chatter at 19' 10:37 AM: Take S-5 20'-22' Drill to 25' Wash is brown Hard drilling at 23'
[Symbol: Cross-hatch pattern]	-10.0	Class 1d	DECOMPOSED ROCK (Class 1d)	22	S-6	SS	15	10	52	10:50 AM: Take S-6 25'-27'
[Symbol: Arrow pattern]	-15.0	Class 1a	Black/gray coarse grained, sound, unweathered GNEISS with pegmatite	24	C-1	NX CORE	REC=60"/60" = 100%	RQD=55"/60" = 92%		Drill to 30' Wash is brown Hard drilling and rig chatter at 28' Drill cuttings indicate rock fragments Drill stops advancing at 29' 11:10 AM: Set up NX core barrel 11:15 AM: Begin 5' core run at 29'-6" Driller increased spin of the core barrel Wash is light gray 11:36 AM: End of run 12:06 PM: Install observation well 10' screen and 10' riser
			End of boring at 34'	26						
				27						
				28						
				29						
				30						
				31						
				32						
				33						
				34						
				35						
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Project <b>Wards Island Boilers</b>		Project No. <b>170205601</b>	
Location <b>Wards Island, N.Y.</b>		Elevation and Datum <b>Approx. 18.5 (BPMD)</b>	
Drilling Company <b>Warren George Inc.</b>		Date Started <b>8/2/12</b>	Date Finished <b>8/3/12</b>
Drilling Equipment <b>B-53 Truck Mounted Rig</b>		Completion Depth <b>35 ft</b>	Rock Depth <b>30 ft</b>
Size and Type of Bit <b>3 7/8" Tricone Roller Bit</b>		Number of Samples	Disturbed <b>11</b>
			Undisturbed <b>0</b>
			Core <b>1</b>
Casing Diameter (in) <b>4" I.D. Flush Joint Steel</b>	Casing Depth (ft) <b>29</b>	Water Level (ft.) <b>10.1</b>	Completion <b>10.3</b>
Casing Hammer <b>Safety</b>	Weight (lbs) <b>140</b>	Drop (in) <b>30</b>	24 HR. <b>10.3</b>
Sampler <b>2" Split Spoon</b>		Drilling Foreman <b>Sammy Colon</b>	
Sampler Hammer <b>Safety</b>		Inspecting Engineer <b>Rebecca Pinckheard</b>	
	Weight (lbs) <b>140</b>		Drop (in) <b>30</b>

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MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Coring min/ft	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
						Number	Type	Recov. (in)	Penetr. resist. BL/ft		N-Value (Blows/ft)	
	+18.5		Black/brown f-c SAND, trace fine gravel, trace silt, trace roots [FILL] (Class 7)		0							
		Class 7	Black f-c SAND, trace fine gravel, trace silt [FILL] (Class 7)		1	S-1	SS	13	6	13		
					2				7			
					3	S-2	SS	2	5	12		
					4				7			
			Black/brown f-c SAND, trace fine gravel, trace silt [FILL] (Class 7)		5	S-3	SS	5	8	17		
	+12.5				6				9			
		Class 3b	Brown f-c SAND, trace silt [SP] (Class 3b)		7	S-4	SS	<5	13	26		
	+10.5				8				13			
		Class 4b	Brown m-f sandy CLAY [CL] (Class 4b)		9	S-5	SS	3	4	9		
	+8.5				10				5			
			Gray/brown f-c SAND, trace silt, trace clay [SP] (Class 3b)		11	S-6	SS	12	7	18		
					12				11			
		Class 3b			13				9			
					14							
			Brown f-c SAND, trace silt [SP] (Class 3b)		15	S-7	SS	12	5			
					16				6	14		
					17				8			
					18				12			
	0.0	Class 2a			19							
					20							

8/2/2012  
 8:18 AM: Advance casing to 4'

9:07AM: Drill to 15'  
 Wash is gray/brown  
 9:21 AM: Take S-7 15'-17'  
 9:30 AM: Drill to 30'  
 Wash is brown  
 Loss of water from mud tub  
 Hard drilling  
 Rig chatter at 18.5'



Project			Project No.							
Wards Island Boilers			170205601							
Location			Elevation and Datum							
Wards Island, N.Y.			Approx. 18.5 (BPMD)							
MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Coing min/ft	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
					Depth Scale	Number	Type	Recov. (in)		Penetr. resist. BU/ft
	-6.5	Class 2a	No recovery	20				14	9:52 AM: Take S-8 20'-22'  10:17 AM: Take S-9 22'-24'  Rig chatter at 23.5' Wash is light brown/dark gray Hard drilling 23.5' to 25' 11:14 AM: Take S-10 25'-27'	
			Black/brown fine GRAVEL, some f-c sand, some silt [GM-GW] (Class 2a)	21	S-8	SS	0			14
				22						18
				23	S-9	SS	4	21		32
				24				56		
				25						25
				26	S-10	SS	7	11		14
				27				54		
				28						
				29						
	-11.5	Class 1b	Gray/black/white hard fine grained, sound, unweathered MICA SCHIST (Class 1b)	30					11:23 AM: Drill to 30' Rig chatter, hard drilling Wash is light brown 12:12 PM: Take S-11 30'-32' Refusal of split spoon 1:00 PM: Spin/push 3' casing to a depth of 29' 2:05 PM: Set up NX core barrel 2:13 PM: Begin 5' run Driller increased spin of the drill at 31' Wash is gray 2:48 PM: end of run 3:15 PM: Retrieve core barrel End of the day 8/3/2012 7:00 AM: Install observation well 10' screen 9'-6" riser	
				31	C-1					
				32						
				33						
				34						
				35						
	36									
	37									
	38									
	39									
	40									
	41									
	42									
	43									
	44									
	45									

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Project <b>Wards Island Boilers</b>		Project No. <b>170205601</b>	
Location <b>Wards Island, N.Y.</b>		Elevation and Datum <b>Approx. 27 (BPM)</b>	
Drilling Company <b>Warren George Inc.</b>		Date Started <b>7/30/12</b>	Date Finished <b>8/1/12</b>
Drilling Equipment <b>B-53 Truck Mounted Rig</b>		Completion Depth <b>31 ft</b>	Rock Depth <b>27 ft</b>
Size and Type of Bit <b>3 7/8" Tricone Roller Bit</b>		Number of Samples <b>7</b>	Disturbed <b>7</b>
Casing Diameter (in) <b>4" I.D. Flush Joint Steel</b>		Casing Depth (ft) <b>29</b>	Undisturbed <b>0</b>
Casing Hammer <b>Safety</b>	Weight (lbs) <b>140</b>	Drop (in) <b>30</b>	Core <b>2</b>
Sampler <b>2" Split Spoon</b>		Water Level (ft.) <b>First</b>	Completion <b>6.1</b>
Sampler Hammer <b>Safety</b>		Drilling Foreman <b>Sammy Colon</b>	
Weight (lbs) <b>140</b>	Drop (in) <b>30</b>	Inspecting Engineer <b>Rebecca Pinckheard</b>	

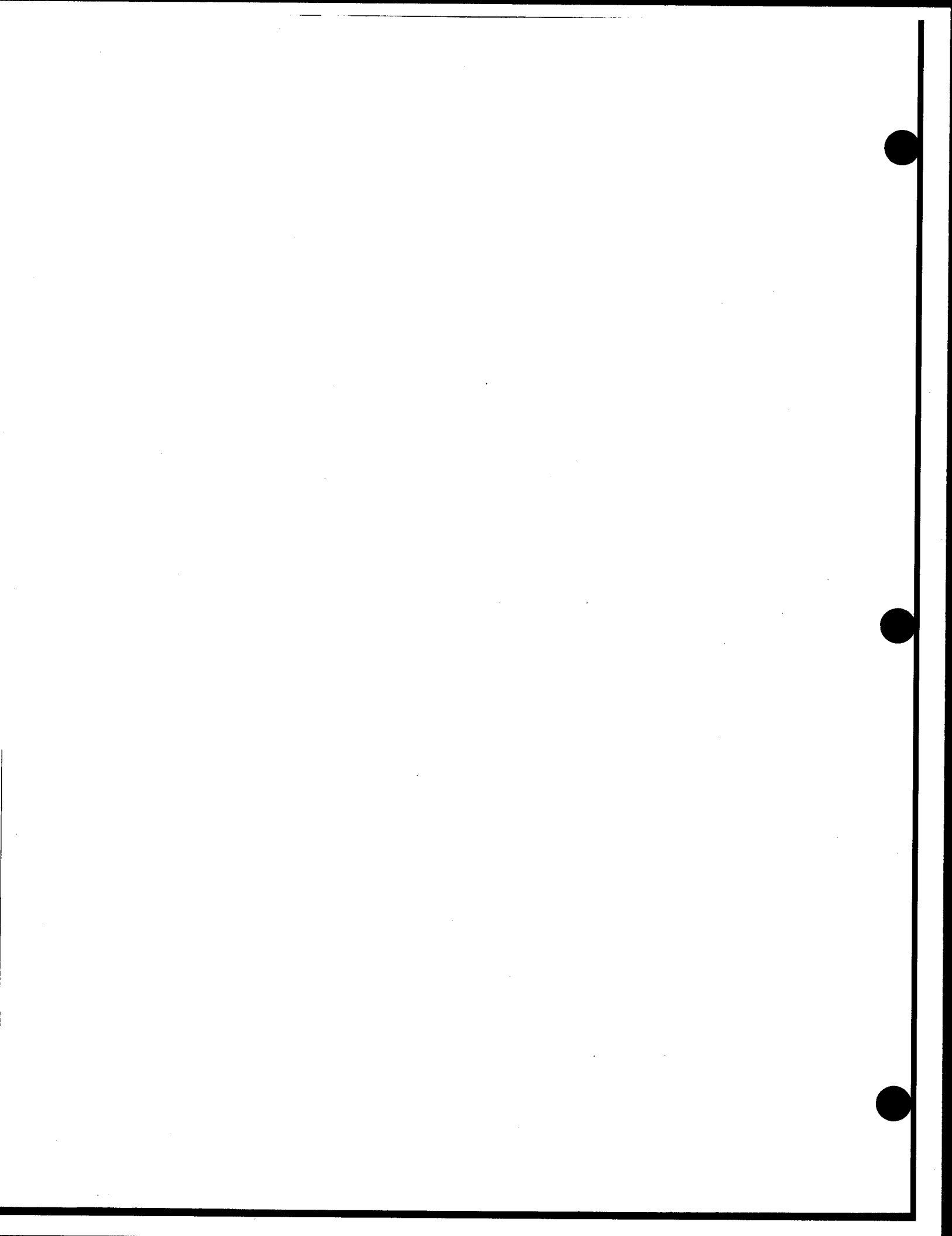
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MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Casing blow/ft Coring min/ft	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
						Number	Type	Recov. (in)	Penetr. resist. BL/5in		N-Value (Blows/ft)	
	+27.0				0							
			Brown f-m SAND, trace silt, trace gravel [FILL] (Class 7)		1	S-1	SS	10	18	45		7/30/2012 1:00 PM: Take S-1 0'-2'
					2				27			
					3	S-2	SS	5	38	59		1:11 PM: Take S-2 2'-4'
		Class 7	Brown f-c SAND, some fine gravel, trace glass, trace red brick [FILL] (Class 7)	254	4				21			
					5	S-3	SS	5	11	24		1:35PM: Advance casing to 4'
			Black fine GRAVEL, some silt, some f-c sand [FILL] (Class 7)		6				3			Wash out borehole to 4'
					7	S-4	SS	4	8	13		Driller adds revert to mud tub
					8				14			1:53PM: Take S-3 4'-6'
					9	S-5	SS	4	6	11		2:04 PM: Take S-4 6'-8'
					10				5			2:11 PM: Wash out borehole to 8'
		Class 3b	Brown f-c micaceous SAND, trace fine gravel, trace silt [SM] (Class 3b)		11	S-6	SS	5	9	19		Mud tub is losing water
					12				10			2:17 PM: Take S-5 8'-10'
					13				4			
					14				7			
					15				9			2:24 PM: Take S-6 10'-12'
					16	S-7	SS	9	14	34		2:30 PM: Advance casing to 9'
		Class 3a	Brown f-c micaceous SAND, trace silt, trace fine gravel [SP-SM] (Class 3a)		17				20			Drill to 15'
					18				14			Wash is brown
	+9.0		BOULDER		19	C-1	NX CORE					Driller adds revert to mud tub
	+8.0				20							2:47 PM: Take S-7 15'-17'



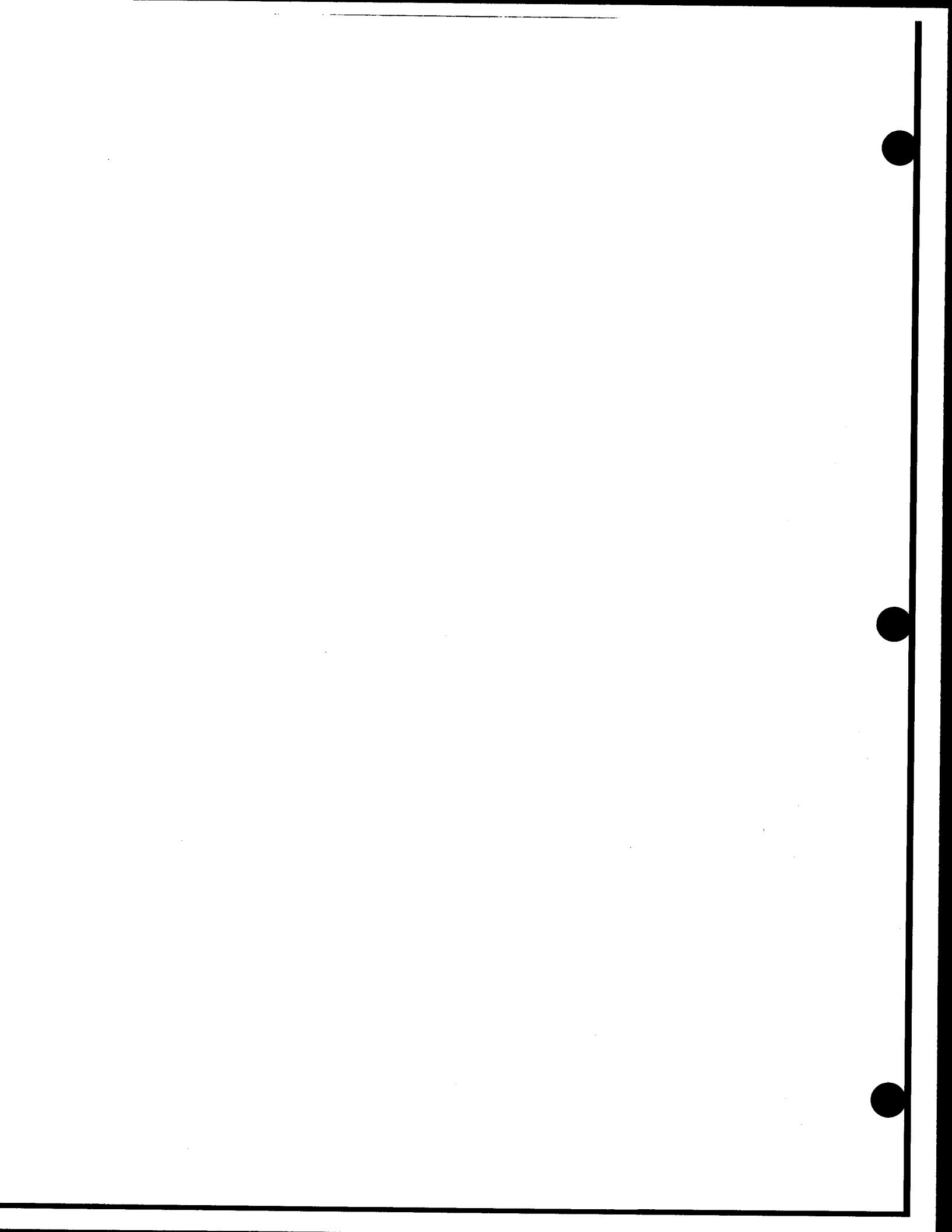
Project			Project No.								
Wards Island Boilers			170205601								
Location			Elevation and Datum								
Wards Island, N.Y.			Approx. 27 (BPMD)								
MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Casing blows/ft Coring min/ft	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
						Number	Type	Recov. (in)	Penetr. resist. BL/6in		N-Value (Blows/ft)
	+6.0	Class 3a	Brown f-c gravelly SAND		20						2:51 PM: Drill to 20' Hard drilling and rig chatter at 18' Loss of water End of the day at 3:15 PM
	+4.0		BOULDER		21	C-1	NX CORE	14			<p><b>7/31/2012</b> 7:00 AM: Langan on site 7:45 AM: WGI on site Switched to a 2 15/16" tricone roller bit Drill to 18' Hard drilling and rig chatter at 18' 8:05 AM: Spin 3" casing to 18' Wash out borehole 9:30 AM: Set up NX core barrel 9:38 AM: Begin 5' rock core Core advanced rapidly from 19' to 20'-6" Hard drilling at 20'-6" Core advanced rapidly from 20'-8" to 21'-6" Hard drilling at 21'-6" 10:34 AM: End of run at 23' 11:23 AM: Attempt to put core barrel back into the hole to core another 5', barrel jammed at 20' 11:46 AM: Drill to 30' Hard drilling at 27' Driller adds revert to the mud tub 12:19 PM: attempt to advance casing (6 mins.), casing does not advance 12:25 PM: Drill rods stuck Equipment broke 1:35 PM End of the day</p> <p><b>8/1/2012</b> 8:00 AM: Langan on site 8:30 AM WGI on site Advance 3" casing to 24' (170 blows per 5' with 300lb hammer) 9:18 AM: Fill mud tub with water 9:20 AM: Wash out borehole to 27' 9:55 AM: Set up NX core barrel 10:10 AM: Begin 5' core run, core advanced rapidly from 26' to 26'-6" Wash is a light/dark gray 11:03 AM: End of run 12:03 PM: Install observation well 10' screen 13' smooth</p>
					22						
		Class 3a			23						
					24						
					25						
					26						
	0.0				27						
		Class 1c	Black/gray/white coarse grained, slightly fractured, slightly weathered GNEISS		28	C-2	NX CORE	REC=44"/60" = 73%	RQD=25"/60" = 42%		
					29						
					30						
					31						
			End of boring at 31'		32						
					33						
					34						
					35						
					36						
					37						
					38						
					39						
					40						
					41						
					42						
					43						
					44						
					45						

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## **APPENDIX B**



**Langan #170205603**  
**Wards Island**  
**LABORATORY TESTING DATA SUMMARY**

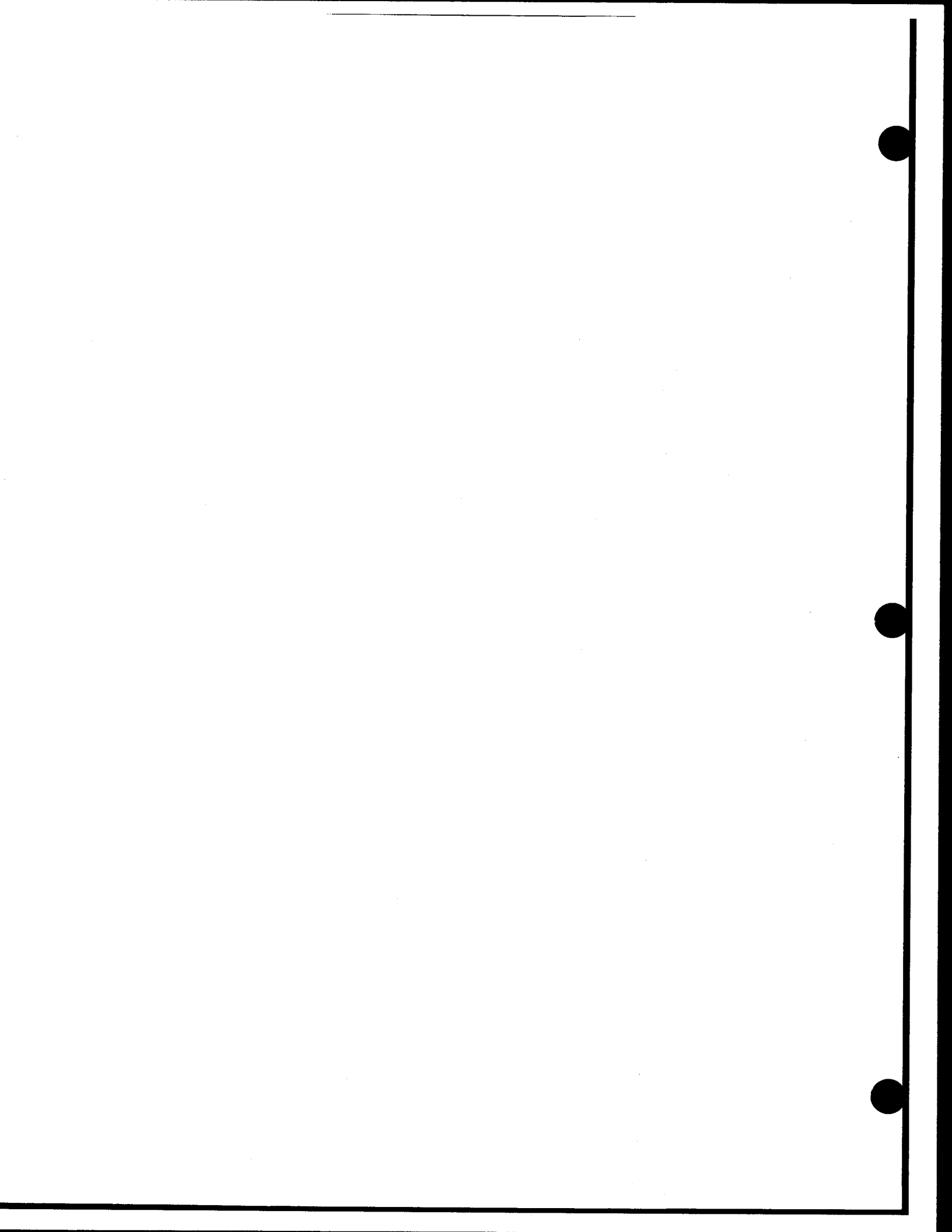
BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS						REMARKS
			WATER CONTENT (%)	LIQUID LIMIT (-)	PLASTIC LIMIT (-)	PLAS. INDEX (-)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	
B-1	S-3	4-6	8.4				SP-SM	7.0	
B-2	S-5	20-22	13.9				SM	16.1	
B-3	S-5	8-10	23.9	26	18	8	CL	58.0	
B-3	S-10	25-27	8.3				SP-SM	9.7	
B-4	S-6	10-12	18.5				SM	16.7	

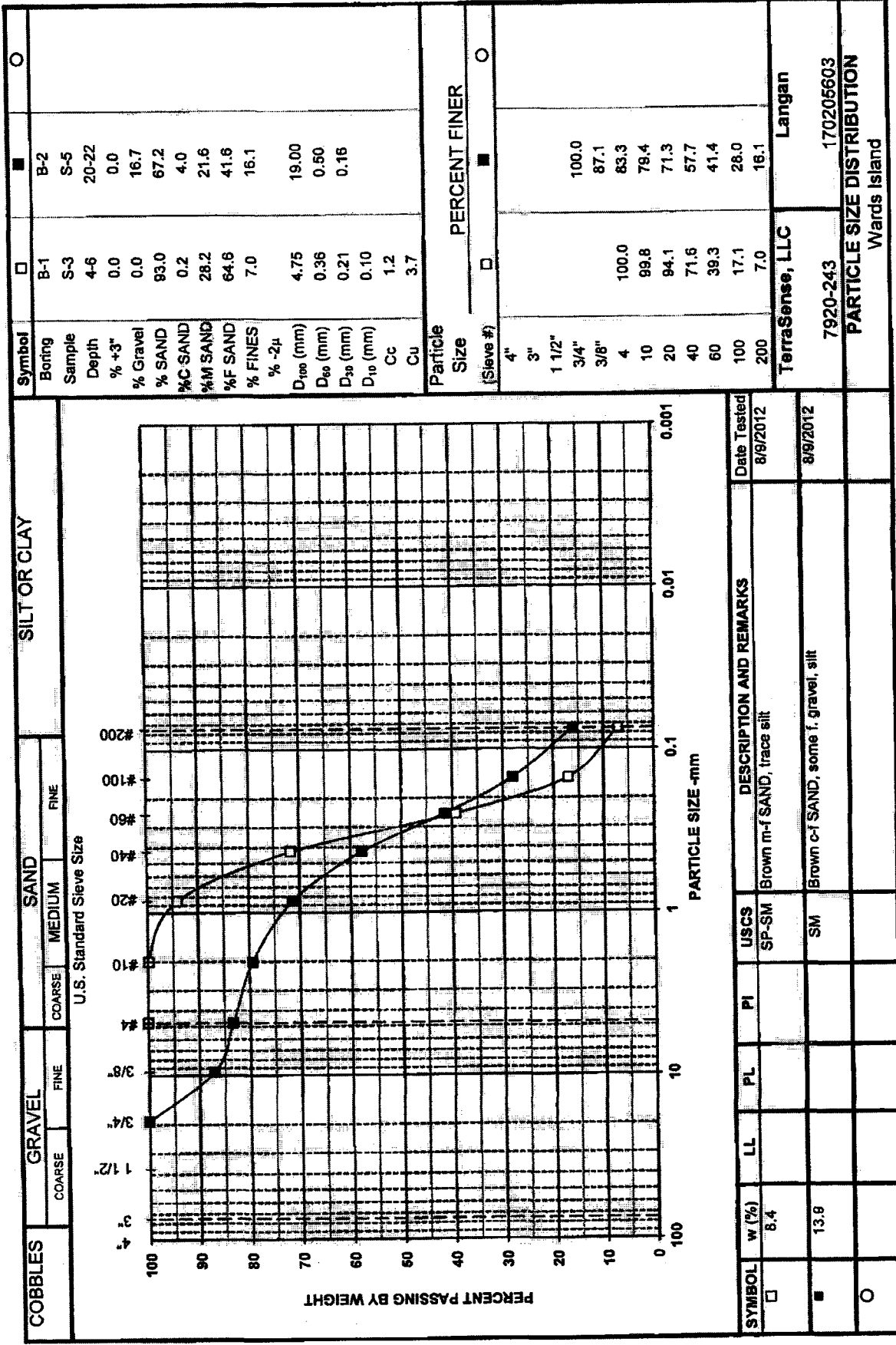
Note: (1) USCS symbol based on visual observation and Sieve and Atterberg limits reported.

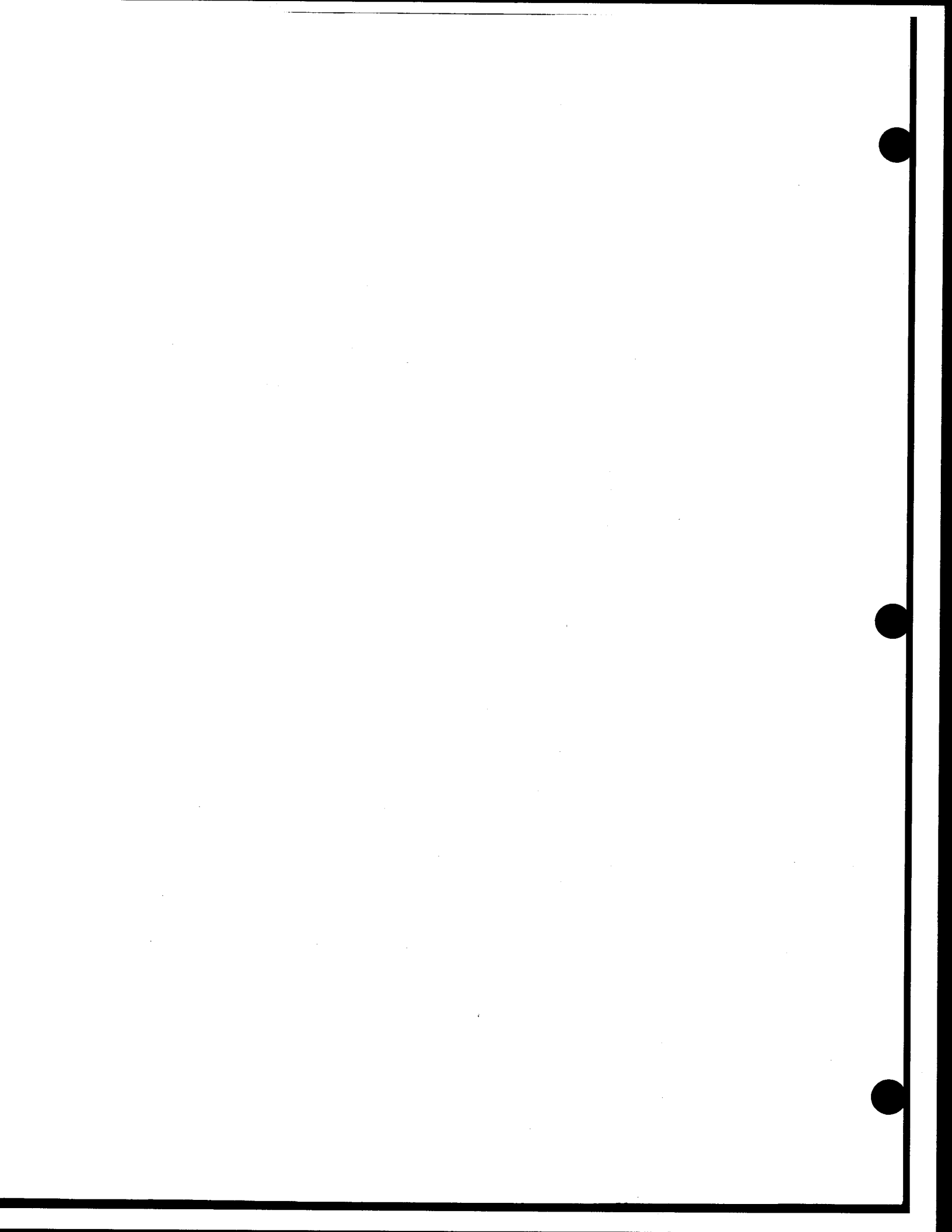
Prepared by: JR  
 Reviewed by: CMJ *CMJ*  
 Date: 8/13/2012

**TerraSense, LLC**  
 45H Commerce Way  
 Totowa, NJ 07512

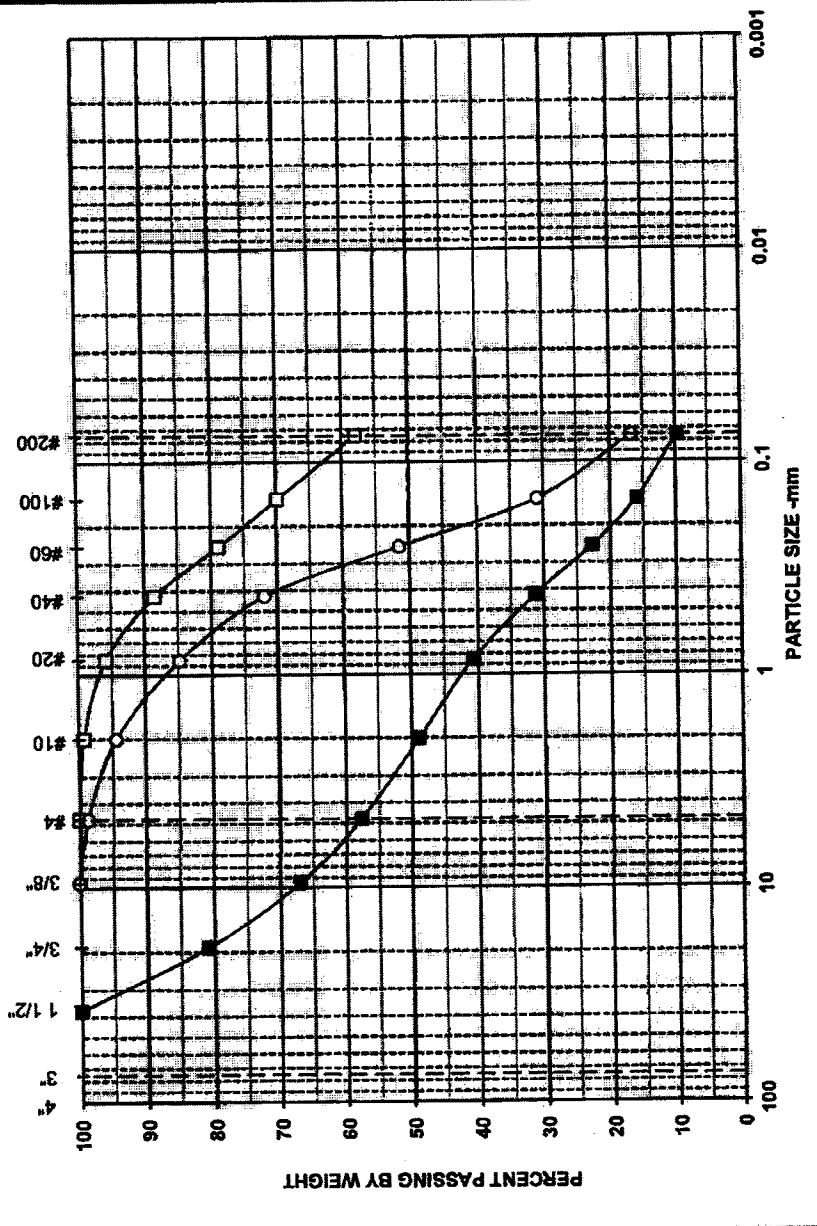
Project No.: 7920-243  
 File: Indx1.xls  
 Page 1 of 1



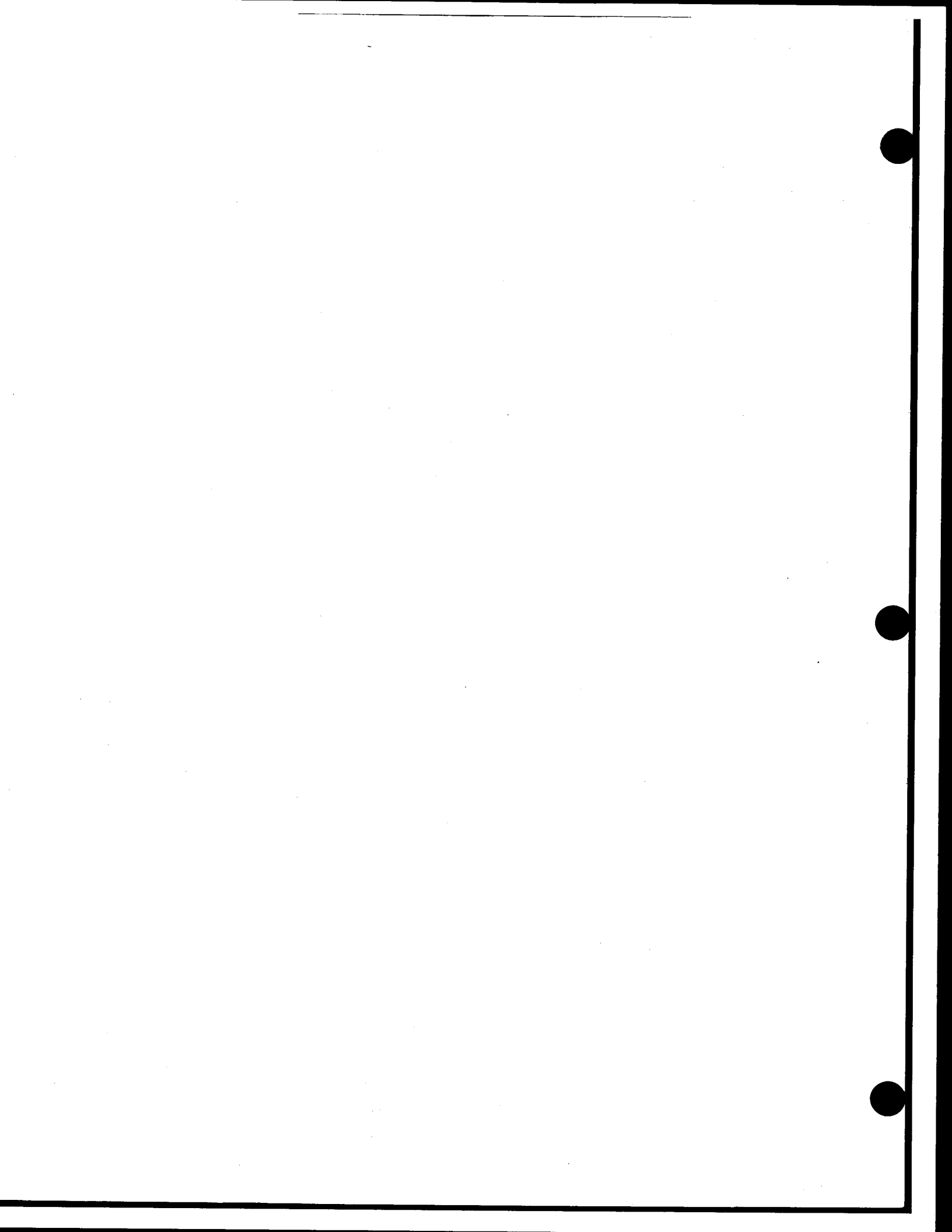




COBBLES		GRAVEL		SAND		SILT OR CLAY	
		COARSE	FINE	COARSE	MEDIUM	FINE	
Symbol	Boring Sample	B-3	S-5	B-3	S-5	B-3	S-5
Depth	% +3"	8-10	0.0	0.0	0.0	25-27	10-12
% Gravel	% SAND	0.0	42.0	42.0	0.0	42.3	82.0
% C SAND	% M SAND	0.7	10.8	0.7	17.5	8.8	4.3
% F SAND	% FINES	30.5	58.0	30.5	9.7	21.6	22.5
% -2 $\mu$						9.7	16.7
D <sub>100</sub> (mm)		4.75		4.75		37.50	9.50
D <sub>60</sub> (mm)		0.09		0.09		5.95	0.32
D <sub>30</sub> (mm)						0.40	0.15
D <sub>10</sub> (mm)						0.08	
Cc						0.3	
Cu						75.9	
Particle Size (Sieve #)	PERCENT FINER						
4"							
3"						100.0	
1 1/2"						80.9	100.0
3/4"						66.9	98.7
3/8"						57.7	94.4
4		100.0		100.0		48.8	84.8
10		99.3		95.9		40.6	71.9
20		88.4		78.9		31.3	51.5
40		69.8		58.0		15.9	30.9
60						9.7	16.7
100							
200							
		TerraSense, LLC		Langan			
		7920-243		170205603			
		PARTICLE SIZE DISTRIBUTION		Wards Island			



SYMBOL	w (%)	LL	PL	PI	USCS	DESCRIPTION AND REMARKS	Date Tested
□	23.9	26	18	8	CL	Brown m-f sandy CLAY	8/9/2012
■	8.3				SP-SM	Gray gravelly c-f SAND, trace silt	8/9/2012
○	18.5				SM	Brown c-f SAND, some silt, trace f. gravel	8/9/2012







FMS ID: HH112WBLR



**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](http://www.nyc.gov/buildnyc)

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

CONTRACT NO. 1 GENERAL CONSTRUCTION WORK

**Installation of New Central Boiler Plant  
and Fuel Tanks for Wards Island  
Project**

LOCATION: Clarks Thomas Building, HELP SEC Building, Keener Building,  
Wards Island  
BOROUGH: Manhattan 10035  
CITY OF NEW YORK

Contractor \_\_\_\_\_

Dated \_\_\_\_\_, 20\_\_\_\_

Entered in the Comptroller's Office \_\_\_\_\_

First Assistant Bookkeeper \_\_\_\_\_

Dated \_\_\_\_\_, 20\_\_\_\_

